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THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., JANUARY, 1878. NUMBER 1.

THE

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HENRY SKAER, Publisher,

1213 South Sixth Street, SAINT LOUIS.

IT IS with no little diffidence that we issue this, our first number of the VALLEY NATURALIST. Its object is to aid the diffusion of natural science in a popular form, and to furnish a medium of recording the observations of our *Western Amateur Naturalists.*

We are aware that there are many scientific papers in the East, in which a Naturalist can publish the results of his observations, but there is none in which he can place the many minor notes that every working Naturalist daily makes, and which, for this reason, however interesting they may be, often remain forever buried in the note-book of the observer.

Instead, then, of wishing to set up as a rival to our Eastern brethren, we wish to be considered rather as aiding and supplementing their good work. The paper is not expected to pay pecuniarily, nor perhaps to have more than a local circulation. We intend to enlarge it whenever our subscription list will justify the expense

Naturalists, we hope, will aid us both by subscribing and contributing articles for publication. A limited space shall be devoted to Advertisements, for the benefit of those who may have for sale or exchange books, collections, etc., of interest to the scientific reader. Articles for publication and subscriptions should be send to the publisher, Henry Skaer, 1213 South Sixth Street, Saint Louis, Mo.

Albino Opossum.

Ed. The Valley Naturalist:

I have recently procured a specimen of pure albino Opossum (*Didelphis virginiana*), full grown and well developed. It was taken in the vicinity of Ednia, Knox County, Mo. As such freaks of nature are of rare occurance, I transmit the fact for what interest it may contain. Respectfully,

M. TANDY.

DALLAS CITY, ILL., Dec. 24, '77.

To Correspondents.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not from what locality they do come.

The Geological Formation of LaSalle County, and their Organic Remains.

We have just received a sixteen page pamphlet, published by William Wirt Calkins, of Chicago, Ill. Containing a description of the Quaternatory system, the Carboniferous and Silurian formations of LaSalle County, Ill. Also a list of species of the organic remains of said county.

A New Genus of Aphidæ.

On another page we reprint from the "Canadian Entomologist," a new genus of Aphidæ described by Mr. J. Monell, of the Missouri Botanical Gardens, located at this city. Mr. Monell has just discovered another genus, which he has named *orthoneura*. We hope he will kindly furnish his many friends and the readers of the VALLEY NATURALIST, through its columns, with an illustrated description of it.

Kentucky Blue Grass.

Last spring an insect was reported to do considerable damage in the blue-grass region of Kentucky, since then we have not heard anything more about it. If some gentleman would kindly furnish us with a description of it for publication, we would be greatly indebted to him.

To Advertisers.

As an advertising medium, this paper has no equal. Persons having collections for sale will find it to their interest to advertise them in this paper, as it reaches every naturalist in the United States and Canada.

The attention of publishers of scientific works and book-sellers is respectfully called, as this is the best medium for advertising books "in press," or lists of books for sale by them.

In our next issue we shall establish a "want and exchange" column, for the benefit of those who may want to exchange insects, plants, bird-skins, books, reports, etc. The price for insertions under this head, will be ten cents per line, (from five to seven words to the line,) for each insertion.

Botanical Monstrosity.

We have recently received some monstrous apple-flowers collected by Prof. LEIGH, of New York. There may be seen on turning down the five minute, pointed, sepal-like organs, into which the petals are transformed, the fifteen pistils enclosed. The outer ten extra pistils form a ten-celled, superior core, and the five regular pistils, within, extend down through them to the regular five-celled ovary below.

The number of petals is occasionally but four, and the pistils vary from twelve to fifteen. We see no direct way of accounting for the presence of the ten extra pistils, except to consider them as transformed from the twenty missing stamen; this is however contrary to analogy, as transformations of this sort rarely ever occur in other plants.

The original tree is quite old, and is unfortunately in a dying condition. Grafts have however, been made, so that this peculiar monstrosity will not be lost to science by the death of the original tree. It has been suggested that the fruit may also have an economic value, as, in an orchard away from other apple trees, blooming at the same time, the large, early fall cooking apples would probably be quite seedless. J. M.

PERSONS receiving copies of the NATURALIST who are not subscribers. will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription. With your aid, we hope soon to be able to enlarge the NATURALIST to double its present size.

PLANTAGO MAJOR.—Some very interesting remarks on this genus occur in the first vol. of the "Botanical Gazette." We have noticed the branching spikes of this species at St. Louis for several years past. In one locality, a few miles west of this city, plants with the branched spikes, were far more numerous than the normal form. J. M.

Anacreons ode to the Cicada.

Happy creature! what below
Can more happy be than thou?
Seated on thy leafy throne,
Summer weaves thy verdant crown,
Sipping o'er the pearly lawn
The fragrant nectar of the dawn.
Mirthful tales thou love'st to sing,
Every inch an insect king:
Thine the treasures of the field,
All thy own the seasons yield.
Nature plants for thee the year,
Songster to the shepherds dear,
Innocent, of placid fame
Who of man can boast the same,
Thine the lavished voice of praise,
Harbinger of fruitful days.
Darling of the tuneful nine,
Phœbus is thy sire devine,
Phœbus to thy notes has given
Music from the spheres of heaven.
Happy most, as first of earth,
All thy hours are peace and mirth.
Cares nor pains to thee belong,
Thou alone are ever young,
Thine the pure immortal vein,
Blood nor flesh thy life sustain,
Rich in spirits, health thy feast,
Thou'rt a demigod at least.

—[WESTWOOD.

Entomology.

A NEW GENUS OF APHIDÆ.

BY J. MONELL, MISSOURI BOTANIC GARDENS, ST. LOUIS, MO.

Colopha, nov. gen.

Antennæ six jointed, wrinkled transversely, and almost moniliform.

Front wings with three discoidals; the cubital once-branched.

Hind wings with one oblique vein.

Wings in repose, usually horizontal.

Colopha ulmicola Fitch, N. Y. Rep., II., 347. *Thelaxes ulmicola* (Walsh), Proc. Phil. Ent. Soc., I., "American Entomogist," vol. I., 108.

The above-mentioned species was originally described by Dr. Fitch (N. Y. Rep., 347), who had not seen the winged form, as *Byrsocrypta ulmicola*. The winged individuals were first described by the late Prof. Walsh, who removed it to "*Thelaxes* Westw." Judging alone from the original description of *Thelaxes* in the "Synopsis of British Genera of Insects," it would be almost impossible to say whether this insect is a *Thelaxes* or not; but Prof. Westwood states in his "Arcana Entomologica." (II., p. 64) that his genus *Thelaxes* is synonymous with *Vacuna* Kalt.; and since, in addition to other differences, *Vacuna* has five-jointed antennæ, it is evident that our insect can not belong to that genus, and as I can find no generic description which will at all agree with this, either in our American authorities or in Koch, Kaltenbach and Passerini, I have presumed it to be new and described it accordingly.

The bibliography of this species really seems like a "Comedy of Errors." Dr. Fitch placed it in a wrong genus; Mr. Walsh removed it to *Thelaxes* and refers to N. Y. Rep., II., 257, instead of II., 347. "The American Entomologist" omits to index it for p. 224. Mr. Packard (Guide, p. 525) mentions *Thelaxes ulmicola* Walsh, while on the next page he speaks of *Pemphigus ulmicola* (Fitch), and refers to figure 525, which is from an electrotype of the identical woodcut first published by Messrs. Walsh and Riley in the "American Entomologist," under the name of *Thelaxes ulmicola* Fitch. Mr. Packard's figure 525 is, therefore, evidently my *C. ulmicola*, and, indeed, I have have so far failed to find any other mention of a *Pemphigus ulmicola* Fitch.—[*Canadian Entomologist*. Vol. IX., No. 6.

The Academy of Science.

The Academy of Science met at the Polytechnic Institute, Monday night, December 17th. Prof. C. V. Riley, President in the chair.

A very interesting paper on "Migratory Butterflies," was read by the President:

Many quadrupeds that multiply rapidly often acquire the migratory propensity. Many insects, normally non-migratory, also exceptionally congregate and migrate in vast swarms, and this is especially the case with butterflies, flights of which, and particularly of the yellows (*Callydrias* and *Colias*), and the whites (*Pieris*), have been reported from Equatorial and South America, and from different parts of Europe. Vast flocks have also been observed at sea. The newspapers in the Southwest, and the Signal Officers were constantly reporting the passage over Iowa, Kansas, Missouri and Texas, of swarms of butterflies during the months of September and October last. These consisted, in every case where determinations were made, of the Archippus butterfly (*Danais Archippus*), which is the principal species none to thus migrate in North America.

In an account of the swarming of this butterfly, published in 1870 (Third Mo. Ent. Rep., p. 151), I wrote as follows: "It would be difficult to give any satisfactory reason for this assembling together of such immense swarms of butterflies. "Mr. Bates, (Naturalist on the River Amazon, Vol. I, p. 249.) gives an interesting account of the uninterrupted procession of butterflies belonging to the genus *Callydrias*, which passed from morning to night in a southerly direction, across the Amazons, and as far as he could ascertain, these migratory hordes were composed of males." As I have abundantly proved by examination of specimens since the above was written, the individuals composing the swarms of our Archippus butterfly comprise both sexes; if anything the females prevail. The flights almost always occur in the autumn, when the milk-weeds (*asclepias*) upon which the larva of this butterfly feeds, have parished. The instinct to propagate is, therefore, at the time in abeyance. The butterflies, unable to supply themselves with sweets from flowers, are either attracted in quantities to trees that are covered with honey-secreting plants, bark-lice, or else they must migrate southward, where flowers are yet blooming. The Archippus butterfly hibernates within hollow trees and other sheltured situations. Southerly timber regions offer most favorable conditions for such hibernation. Under the most favorable conditions, a large majority perish. A small portion of the females survive the winter. Such hibernated individuals, upon waking from their winter torpor, make at once for the prairie, where the milkweeds most abound. Faded and often tattered, they may be seen flying swiftly over such prairies. I have no doubt but that they travel thus for many hundred of miles, keeping principally to the north, and ere they parish, supplying the milkweeds here and there with eggs. A fresh brood is produced in less than a mouth, and these extend still further north, until we find the species late in the growing season as far up as the Saskatchewan country, where it can scarcely successfully hibernate, and from whence the butterflies instinctively migrate southward. We can thus understand how there are two, three or more broods in southerly regions, but only one toward British America.

The exceptional flights noticed in the spring, and which, so far as recorded, take place quite early and in the same southerly direction, find a similar explanation. They may be looked upon as continuations of the autumn flights. Hibernating in the temperate beld, they are awakened and aroused upon the advent of spring, to find the milkweeds not yet started; and they instinctively pass to more southern regions. There is a sonthward migration late in the growing season in congregated masses, and a northward dispersion early in the season through isolated individuals. It is a notable fact that the two butterflies which most display this instinct, viz: the species in question and the Painted Lady (*Cynthia Cardui*), have the widest range of known species. This last is cosmopolitan, occuring in all four quarters of the globe, while our Archippus, originally confined to North America, though ranging from Canada to Bolivia, appears to be following the milkweeds, wherever these are, through chance or purpose introduced. It has lately spread over some of the islands of the Pacific to Queensland and New Guinea, and over the Azores to Europe—such spread necessarily indicating great power of long-sustained flight. Since the milkweeds are not plants of commercial value, and it is highly improbable that the species has been carried in any of the preparatory states on ships.

It was suggested by the President that the State Signal Service might render itself useful in noting the migration of birds, animals, insects, etc.

Dr. Engleman presented some engravings from an English journal, of a species of fungus, much like that which attaches itself to the potato in Great Britian, which had been kept preserved in the rocks thousands and thousands of years. The Doctor then made some interesting observations on American firs, of which, he remarked, there were eight or nine kinds here.

In consequence of some official statements by Prof. Cook, of the Michigan Agricultural College, the President desired it to go on record that he totally disagreed with the professor as to there being any connection between *phylloxera* and the rot on the vine.

Dr. Engleman agreed with the President in this view.

Botany.

Report of the Botanist Charles H. Peck, made to the Regents of the University of the State of New York.

Mr. Peck is doing good work for the much neglected Fungi. This Report contains a list of about eighty species, new to science, and two hundred new to the herbarium. It is to be hoped that our own state will profit by the example of New York. In as much as many of our readers may never meet with Mr. Peck's Reports we will give a short account of his method of preserving Fungi. The importance of an Herbarium is so great to the working botanist that it seems as if many plants are studied or neglected just in proportion as they can be dried and preserved.

The method formerly employed for the Fungi, was to place them in bottles of various solutions; but this is very expensive, and, besides, takes up too much room. A number of receipts for the preservative solutions are given in the "Linnean Transactions," Vol. II. p. 263.

Mr. Lugensdorff proposed the plan of boiling the fleshy Fungi in mutton fat and thus filling the pores and cells, and then covering them with a thin coat of varnish, but this is troublesome and a disagreeable operation, and not only does not preserve the color and form, but causes them to occupy a vast deal of space in the cabinet. Mr. Peck recommends that the fleshy species of *Agarici Boleti*, etc., should be dried as soon as possible in the full rays of the sun or placed near a stove, care being taken that they are not discolored by overheating. After being thoroughly dried they may be relaxed by being placed in a damp atmosphere, until they are flexible enough to be pressed into proper shape to lie well upon the herbarium sheets.

Fungi of a dry and coriaceous texture usually need no preparation previous to being placed in the plant press. Such speci-

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mens as cannot be placed on the herbarium sheets are best arranged in drawers or shelves; though vertical or horizontal sections of them may be placed on the sheets. Very fragile Fungi should be placed in little paper boxes, one-fourth inch deep, which may be glued to the herbarium sheets. The various minute Fungi may be dried in the ordinary plant press, care being taken that they are not crushed in the pressure. It is best to poison all specimens of Fungi in order to preserve them from the depredations of insects. Mr. Peck in the 24th Report recommends the following preparation for poisoning specimens: Corrosive sublimate, 4 drachms; sulphuric ether, 3 ounces; mix and add spirits of turpentine, 2 ounces, and alcohol 3 ounces.

Hooker recommends simply spirits of turpentine in which has been placed a small quantity of corrosive sublimate.

Instead of exposing the specimens to a moist atmosphere it would seem more convenient to use the ordinary Entomological arrangement for relaxing dried butterflies; viz: a tin vessel half full of damp sand. The specimens to be relaxed should be placed in the vessel and covered with a closely fitting lid. In a short time they will become almost as soft and flexible as fresh specimens.

J. M.

ST. LOUIS, Dec. 1877.

Ornithology.

BIRDS OF ST. CLAIR COUNTY, ILL.

BY WM. L. JONES, LEBANON, ILL.

Order—*Raptores.*
Family—*Vulturidæ.*
Genus—*Cathartes.*

Cathartes aura, Turkey Vulture or Buzzard. A common summer resident very rarely seen in winter.

Family—*Falconidæ.*
Genus—*Falco.*

Falco anatum, Duck Hawk. A bird most commonly found in the vicinity of marshes.

Falco columbarious, Pigeon Hawk. A rare bird, have noticed but few specimens.

Falco sparverius. Sparrow Hawk. A common resident, noticed unusual numbers in 1877.

Genus—*Astur.*

Astur atricapillus. Gos Hawk. Rarely seen.

Genus—*Accipiter.*

Accipiter Cooperii, Cooper's Hawk. A common species.

Accipiter fuscus, Sharp-shinned Hawk. Rarely seen in summer, more common in winter

Genus—*Buteo.*

Buteo borealis, Red-tailed or Hen Hawk. One of the most common species found in this locality, have known a pair to breed in the same place for a period of over six years. Very destructive on poultry and small game.

Buteo lineatus, Red-shouldered Hawk. Occasionally seen.

Buteo pennsylvanicus, Broad-winged Hawk. Common in this locality.

Genus—*Archibuteo.*

Archibuteo lagopus, Rough-legged Hawk. A rare winter resident.

Genus—*Nauclerus.*

Nauclerus furcatus, Swallow-tailed Hawk. Rare, more commonly seen during some seasons than in others.

Genus—*Circus.*

Circus hudsonius, Marsh Hawk. A common species.

[Continued.]

The Prairie Lark—Its Insectivorous Habits.

It is still a matter of dispute, whether birds, upon the whole, are the friends or enemies of the farmer. Most persons who have traveled over our Western Prairies, must have noticed small brownish colored birds, often seen dusting themselfs in the road, running or flitting in the neighboring grass as you approach. This is the *Alanda alpestris*, or the Prairie Lark, sometimes called (but much less adapted) the Shore Lark, It belongs to the same genus as the famous Sky Lark of Europe, *Alanda arvensis*, Linn. Care must be taken that the resemblance of names does not lead us to confound this species with the equally common Meadow Lark, which is a much larger bird, with a gray striped back and a bright yellow breast, (strictly it is not a Lark, but belongs to the family of Starlings). The Prairie Lark is of about the same size as some of the larger Sparrows, though more slender in shape. The prevailing color is a brownish gray, strongly tinted with reddish about the neck and shoulders, beneath the color is a sordid white, tinted with brown on the breast and sides. It has a broad band across the middle of the forehead, terminating above and behind the eye into a pointed tuft of feathers, which the bird has the power of elevating and lowering at will, so as to resemble little horns.

The female is more obscure in her markings, and the little horn-like appendages are wanting. These birds stay with us nearly all the year, sometimes seen in the middle of winter, on a bare patch on the prairie, where the snow is blown of. In summer it feeds on the famous cut-worms, which it finds in the following way: Running along near the hills of corn, it stops abruptly from time to time opposite a hill, and stands still as if listening, then, having apparently determined the direction of the worm, it inserts its bill at a short distance from a spear of corn, and by a rapid, rotary motion, it partially burries itself in the loose earth, and then jerking backwards, draggs out a large grub. Taking this worm in its bill, it runs along, until by its acute sense of hearing, or by some other instinct, it becomes aware of the presence of another grub. Then laying down the one previously caught, it quickly dislodges another in the same manner, and taking them both in its bill, it again pursues its search. Having obtained as many as it can carry, it flies off to a neighboring grass-field, where, very probably a brood of young await its arrival.

Thus does this sly little bird perform an humble, but useful part in the economy of nature, and while seeking a living for itself and young, it uncontiously renders an important service to the farmer.

Conchology.

Multiplication of Species in the Families Unionidæ and Strepornatidæ.

BY W. W. CALKINS, CHICAGO, ILL.

From a study of some years in these two great groups of the *Mollusca*, during which time I have compared thousands of specimens and hundreds of species, Many of them collected by myself. I have become more and more convinced that "the business of manufacturing" new species has been overdone. We can with safety "cut down" the present number at least one-half with advantage to science, and to the great relief of our explorers in these departments, who are wandering in confusion amid the labyrinth of species and synonyms that now encumber American Conchology.

It has been found that even the authors of species, do not oftentimes recognize their own progeny. There are too many species in other groups of our terrestrial mollusks. For instance in the *Limnæidæ*, *Physadæ*, *Succinidæ*, etc. There may be half a dozen of each family that will make fair species, there may be but one or two. But as the matter now stands, an additional wrinkle on a shell, or an extra tooth will be sufficient to found another species, possibly a new genera, with *nobis* after it. A worthy (?) effort, for ambition, but death to the student.

The variation in the shells of *Unio* and *Pleurocera* are indeed great after we go south of the Ohio River, but all explainable of the grounds of situation, food, temperature, chemical properties of the waters, etc. Nature shows a disposition to "sport" as she does in the Floral world. Species of *Unio* in southern waters show often a wide divergence from the original types taken from the Ohio and other Northern streams. Hence, many of them have been made into new species. *Unio luteolus*, admitted to be very variable, has a wide distribution, and has been re-discribed many times as a new discovery. *Pleurocera* and other univalve genera have furnished a multitute of forms as to the shells. But, what of the animals, has any difference in their anatomy been found. I think not. I advise an examination of the mouth and each particular member, else we shall ere long loose the greater part of our species, when some ruthless hand shall tear away the present fanciful arbitrary, and artificial distinctions that hedge in genera and species. Of course all classification by genera, not based on natural distinctions and interpreted by nature, and in sympathy with her laws, must sooner or later fall of its own weight. We are now in a sort of transition state, following blindly along in a beaten track, because we "hate change." But though I fail to appreciate the value of many genera and species as they now stand, yet I am indisposed to create a "row," until I have more time, though determined to go to the funeral of our boasted, innumerable species and keep up with the procession if it kills the horse.

BOOK NOTICES.

KEY TO NORTH AMERICAN BIRDS. By ELLIOTT COUES, Assistant Surgeon United States Army. 369 imperial octavo pages. Illustrated by 8 Steel Plates and 238 Wood Cuts. A Manual or Text-Book of the Birds of North America, north of the present Mexican boundary; inclusive of Lower California; exclusive of Greenland. Containing a Synopsis of Living and Fossil Birds, and Descriptions of every North American Species known to this Time. 1 vols., royal 8vo., cloth.

HALF-HOURS WITH INSECTS. Published in twelve parts. Giving a popular account of their Habits, Modes of Life, &c.; which are beneficial and which are injuries to vegetation. By A. S. PACKARD, Jr., of the Peabody Academy of Science. The subjects treated are: Insects of the Garden; Relations of Insects to Man; Insects of the Plant House; Edible Insects; Insects of the Pond and Stream; the Population of an Apple Tree; Insects of the Field; Insects of the Forest; Insects of Mimics; Insects as Architects; Social Life of Insects and Mental Powers of Insects. The volume contains a colored frontispiece, 260 wood-cut illustrations and 392 pages. Crown 8vo.

THE FERNS OF NORTH AMERICA. Text by PROF. DANIEL C. EATON, of Yale College, Illustrated by MR. JAS. H. EMERTON.

The need of a carefully prepared, and thoroughly illustrated work on the American Ferns, has long been felt by those studying these beautiful plants. As yet, no work whatever has made its appearance which contains even a description of all our American species, and the few that have been figured at all, are found scattered through so many foreign works that it is quite impossible to find them, even in an excellent library. Prof. Eaton has for a long time had in contemplation the writing of a work which should possess all the requirements of a scientific student and at the same time be so popular, and so thoroughly illustrated that those unfamiliar with botanical methods could be able with perfect ease to determine any of our American Ferns. The work will be issued in large quarto parts, at intervals of about two months, which is as fast as the plates can be prepared. In the course of the publication of the work, every species known to inhabit U. S. will be figured. Each part will contain three elegant 4to. plates, colored by Chromo Lithography, giving exact representations of from one to three speceis each. The paper on which the plates are

printed will be the best in the market. It will require about twenty parts to complete the work. The text will be printed in large beautiful new type by the well known firm of Rand, Avery & Co., on super-calendered paper, made expressly for the work.

NOTES.

AMONG the recent additions to the Mercantile Library, we notice Latrielle's *Genera Crustaceorum et Insectorum*. 4 Vols. Paris. 1806-9.

A CHEMIST has analysed the venom of a honey bee, showing it to be one part formic acid, two parts water, one part acrid, unstable serum, and three parts miscellaneous fluids.

A BLUE ash tree seven feet in circumference and eighteen feet in height, its top having been previously cut off, was recently dislodged by a swollen stream in Ohio, floated 340 yards, and again took root, six feet above the present level of the creek. and is doing well.

IN fishing at the mouth of the Dee, Scotland, carrier-pigeons are employed. The dove-cot is on the shore, and each boat takes out a pigeon. After the nets are drawn, early in the morning. The pigeon is dispatched, and makes his return trip at a mile a minute. The messages prove useful in giving early details of the catch, and also in notifying of any pressing wants of the fishermen.

FROM the so-called "jumping beans" of Mexico (whose motions are caused by an insect within). Mr. Henry Edwards has succeeded in obtaining a beautiful moth of the *Tortricidae* family and probably a new species. The case is curious, as an instance of one of the lepidoptera piercing a seed capsule with its ovipositor, and laying an egg to produce a larva which will destroy the seed. This sort of performance is mostly confined to coleopterous insects. The account of this new moth was given before the San Francisco Microscopical Society.

THE John Hopkins Scientific Association has recently been organized in Baltimore. Prof. Sylvester is President; Prof. Remson, Vice-President; Dr. Story, Secretary. A feature in the programme is that the essays presented are to be short and concise, and to contain the particulars of original research exclusively. There is also to be a discussion of new scientific publications, both foreign and domestic, at the meetings, of which the first has been held, with a score of members present.

NEW BOTANICAL SPECIMENS.—The Rev. D. Landsborough has made some experiments in growing several Australian plants and trees in Arran, in the Firth of Clyde, including among others the great Australian tree-fern, *acacias* and gum trees. The blue gum tree grew 11 1-2 inches the first year, four feet the second, and six feet the third. *Eucalyptus pendulosa* also grows well in sheltered situations along the west coast, and Mr. Landsborough expects to see it generally introduced into England in a few years as a valuable addition to evergreen shrubs.

THE FLIGHT OF THE PELICAN.—The pelican starts with difficulty; but once on the wing it seems to move despite its size, with great ease. They generally fly in single file, after a leader, and if the head bird mounts or descents, the others imitate perfectly all his movements. During their flight they make seventy strokes of their wings per minute. They have been observed with their wings extended, and apparently immovable, floating in the upper regions of the air; or with their heads bent back and their long beaks on their breasts, they appear to be asleep. They are, nevertheless, not a strong bird, but can be easily captured. They sometimes skim across the surface of the water at the rate of thirty miles an hour without causing a ripple.

CHAS. MAYNARD. J. A. TEDFORD.

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THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., FEBRUARY, 1878. NUMBER 2.

THE

Valley Naturalist.

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The Progress of the "Valley Naturalist."

We note with great pleasure the remarkable way in which our friends and patrons send in their subscriptions the last month. As is well known, the last issue was send to our scientific friends as a "specimen copy," yet it was not as perfect as we intended it to be, as we were unable to secure a revise of it before it went to "press." However, the reader will notice that several improvements have been made in its appearance, both in neatness and correctness.

We hope the VALLEY NATURALIST will some day be recognized as the standard authority of naturai science in our Western States. As we have previously said, its object is to aid the diffusion of natural science in a popular form, and to furnish a medium of recording the observations of our *Western Amateur Naturalists.*

We are aware that there are many scientific papers in the East, in which a Naturalist can publish the results of his observations, but there is *none* in which he can place the many minor notes that every working Naturalist daily makes, and which, for this reason, however interesting they may be, often remain forever buried in the note-book of the observer.

Instead, then, of wishing to set up as a rival to our Eastern brethren, we wish to be considered rather as aiding and supplementing their good work. The paper is not expected to pay pecuniarily, nor perhaps to have more than a local circulation. We intend to enlarge it whenever our subscription list will justify the expense

Naturalists, we hope, will aid us both by subscribing and contributing articles for publication. A limited space shall be devoted to Advertisements, for the benefit of those who may have for sale or exchange books, collections, etc., of interest to the scientific reader. Articles for publication and subscriptions should be send to the publisher,

HENRY SKAER,

1213 South Sixth Street, Saint Louis, Mo.

An Exposition for the Boys.

The Juvenile Industrial Exhibition, which it is proposed to hold next spring at Ballarat, Australia, under the auspices of the Government of Victoria, seems to us to be worthy of imitation here. It is to be a grand show, gotten up with all the paraphernalia of International Expositions, but its exhibitors must be under twenty-one years of age, or else apprentices not yet out of their indentures, whatever their age. There are twenty-four classes, covering all kinds of exhibits from machinery to poems, and special prizes are announced. It would be an excellant plan to undertake something of the kind here, and make natural sciences one of its main features; viz: have determined collections of insects, birds, plants, etc. To make it a national affair would of course render it too ponderous, but such an exhibition might easily be carried out in a single state. The boys often do capital work, and they get very little public encouragement, as they are usually employed under other people who absorb the glory to themselves. Let us have expositions of what the boys can do, to be held, say next summer, it would be a capital winter's work to organize these shows in every township, county or state.

Ranella Clothrata, Gray.

This elegant little shell has heretofore been supposed to exist only on the Pacific coast. But last winter I collected a number of specimens near Cedar Keys, Florida. And recently I made a note of the fact for the *American Naturalist*, but as it has not yet appeared in print, I wish to place the discovery on record. Mr. Tryon to whom I submitted the shell, was somewhat surprised at its occurrence in Florida, and thought I must be mistaken as to locality. But such is not the case.

W. W. CALKINS.

Albino Opossum.

Prof. Burt G. Wilder, Professor of Comparative Anatomy and Zoology, of Cornell University, Ithaca, New York, in a letter dated January 4th, says in regard to the notice of the capture of an albino opossum (*Didelphis virginiana*), appearing in our January number: "It may interest the readers of the VALLEY NATURALIST to know that a similar specimen is in the Museum of Cornell University, a gift from Mr. Green Smith."

Curiosities of Plant Growth.

I have several curiosities of plant growth, a short description of which may be of interest to your readers: The first was taken from a perfect plant of the Liver leaf (*Hepatica acutiloba* D. C.), which had three perfectly developed leaves. In the place of the flowers two stems arise from the plant surmounted by dark green discs covered by minute punctures. These discs are about one inch wide, deeply cut by three lobes in the upper margin; each division of which is cut into two or three sharply pointed divisions, bearing no resemblance whatever to the leaves of the plant. Second, I have a specimen of the common climbing or Michigan rose, found late in September, three months after the usual time for flowering, in which the sepals and petals are natural; but there are only two stamens. In the place of the pistel there rises a stem of leaves to the height of a foot above the ordinary parts of the flower.

GALESBURG, MICH. F. S. S.

Well Pleased.

Office of
U. S. GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.

Editor Valley Naturalist:

I have to acknowledge your kindness in sending me a copy of the VALLEY NATURALIST. I am pleased to observe this evidence of active interest in Natural History on your part, and hope your new venture will be successful. I shall be pleased to received the paper, as I have no doubt it will often contain matter of use to me in the preparation of my books.

Very truly yours

ELLIOTT COUES.

WASHINGTON, D. C. Jan. 5, 1878.

Another One.

Ed. Valley Naturalist:

Allow me to congratulate you upon the good promise of your handsome little paper —the Valley Naturalist. It merits success, and will, I hope be supported heartily from all sides. Every Naturalist should feel that it is for his interest to sustain it.

Yours very truly,

Prof. HENRY S. WARD.

Rochester, N. Y., Jan. 19, '78.

PERSONS receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription. With your aid, we hope soon to be able to enlarge the NATURALIST to double its present size.

The Oaks of the United States. By Dr. George Engelmann. Transactions St. Louis Academy of Sciences. A notice of this paper together with a synoptical table of the species, will be found on another page, under the head entitled "Botany."

The Sea-Bird.

ANNIE ROBERTSON NOXON.

Dear little sea-bird by the sea,
Oh! had I wings as fleet as thine,
In boundless space so free, so free!

Why lingerest thou along the shore,
These lonely sands—this deserted beach,
With heaven almost within thy reach?

All day the mottled clouds look down,
The whispering winds steal up the bay;
And waves—the fisher's child to drown.

At night the wandering moon returns,
Retrims her sails toward the west,
And sees the sea-bird in her nest.

Mysterious songs are in the air,
Of sleeping wood-nymphs in the wood,
Of castle wall and winding stair.

Of lands beyond these treeless crags,
Of worlds remote from sandy lees.
Those happy homes beyond the seas.

Oh, idle sea-bird, lend to me
The wondrous power that in thee lies;
Then should my restless spirit flee!

Still should thy little ones repose
In their rough cradles 'neath the moon,
From which they must depart full soon.

Oh, give to me, oh, give to me
The gift my yearning soul could prize—
Thy fluttering wings, so wild and free!

Beyond the cliff, beyond the shore,
Where laughs the fisher's child at play,
I'd fly away; I'd fly away.

—[Missouri Republican.

Entomology.

White Satin and Black Lined Leaf-Roller.

Reading, in your first issue, of the "Jumping Beans" of Mexico, reminds me that the beautiful white satin and black lined leaf roller (*Conchilodes Platinalis*) is also a jumber. In fact, I should not be surprised if all the *Tortricidæ* were jumpers, from the peculiar long and hard construction of the terminal segments of the moths. I have found the body to retain vitality after several applications of acid. Last July, while catching *Cicindelæ* in a sandy gulch, I became aware of a great commotion in a hole in the sand—supposing it to be a grasshopper—I examined it and found it to be a rolled up leaf, evidently endeavoring to spring out of the depression. Cutting open one end I found it to contain a yellow larva; it spun itself up again, and in a week or ten days the moth emerged. The motion is, no doubt, imparted by the anal segments, the cocoon being baggy at that end.

NEWPORT, KY. C. G. SEEWERS.

List of Catocalæ.

The following is a list of the *Catocalæ* collected by James S. Johnson, of Frankford, Philadelphia, thinking it might be of some service to naturalists who wish to be posted in the location of species, he respectfully submits it for publication:

Epione, Drury, not common. *Lacrymosa*, Guenee, very rare. *Obscura*, Strecker, not common. *Flebilis*, Grote, not common. *Retecta*, Grote, not common. *Insolabilis*, Guenee, not common. *Viduata*, Guenee, very rare. *Desperata*, Guenee, common. *Robinsoni*, Grote, rare. *Judith*, Stecker, rare. *Tristis*, Edwards, rare. *Cara*, Guenee, common. *Amatrix*, Huebner, abundent. *Illia*, Cramer, common. *Parta*, Guenee, not common. *Unijuga*, Walker, rare. *Ultronia*, Huebner, common. *Concumbens*, Walker, very rare. *Innubens*, Guenee, not common. *Piatrix*, Grote, common. *Ponderosa*, Grote & Robinson, rare. *Subnata*, Grote, not common. *Neogama*, Guenee, common. *Paleogama*, Guenee, common. Var. *phalanga*, rare. *Cerogama*, Guenee, rare. *Antinympha*, Huebner, rare. *Habilis*, Grote, common. *Serena*, Edwards, not common. *Grynea*, Cramer, not common. *Amasia*, Abott & Smith, rare. *Minuta*, Edwards, not common.

Botany.

The Oaks of the United States.

BY DR. GEORGE ENGELMANN.

(*Trans. St. L. Acad. Sc. III. p.* 385, *Nov.*'77.)

In this paper, which is a continuation of one published in March last, the following arrangement of the oaks is given:

I. LEPIDOBALANUS, Endl. Male aments pendulous; the pullen grains 0.03-0.04 mm. in diameter; female flowers distant from the male, stigma dilated.

A. LEUCOBALANUS. Aborsive ovales at the base or rarely at the side; stamens usually 6-8; stigma sessile or sub-sessile; nut glabrous within or very rarely pubescent.

* Fruit maturing annually.

† Leaves deciduous.

Quercus alba, lobata (*fructicosa*), *Garryana, stellata, macrocarpa, lyrata, bi-color* (*michauxii*), *prinus, Muehlenbergii* (*prinoides*), *Douglassii, undulata* (*pungens*).

†† Leaves persistent.

Q. oblongifolia, dumosa, reticulata, vereus.

** Fruit maturing in the second year.

Q. chrysolepis (*vacciniifolia, palmeri*), *tomentella.*

B. MELANOBALANUS. Abortive ovales, (excepting *Q. Emoryi*) above, stamens usually 4-6. Styles elongated, finally recurved, nut within *Sericeo-tormentose.*

* Fruit maturing annually; leaves persistent.

Q. Emoryi, agrifolia, pumila, hypoleuca.

** Fruit maturing in the second year.

† Leaves deciduous.

Q. rubra, coccinea (*tinctoria*), *sonomensis, falcata, catesbœi, ilicifolia, palustris, Georgiana, aquatica, laurifolia, nigra, cinerea, imbricaria, Phellos.*

†† Leaves persistent.

Q, wislizeni, myrtifolia.

II. ANDROGYNE, A. DC. Male aments erect, bearing the female flowers at the base; pollen grains about 0.017 mm. in diameter; stigma linear.

Q. densiflora.

An Unknown Narcotic Plant.

I am tempted to notice a plant that grows here of such strong Narcotic powers that, in the hands of a skillfull practitioner, it will produce coma of any intensity or duration, or even death itself when so intended. The knowledge of this plant is confined to a few families, who transmit the secret as an heirloom from generation to generation, and the heiritage is highly prized, confirming, it is the power of miracle workers and priests. For the plant is in many ways used in aid of solemn imposture, superstition, and even crime. The power thus exersized is called "wanga," a word that inspired the African with awe and dread. The wanga priest can throw a person into a death-like coma, and knowing the time of returning consciousness, he will make a show of recalling to life. If a burglary is to be committed, he can, by means of his art, cast a deep sleep on all indoods; and one may understand how he can attain other forbidden ends in the same way. An exqerienced botanist could not fail to discover this plant, which, as an anæsthetic, would no doubt prove a valuable acquisition to medical science.—[*Major R. Stuart. Port au Prince.*

Ornithology.

Birds of St. Clair County, Ills.—II

BY WM. M. JONES, LEBANON, ILL.

Genus—*Haliætus.*

Haliætus leucocephalus. Bald Eagle. A very rare bird, though a few specimens have been procured within the confines of this county.

Genus—*Pandion.*

Pandion carolineusis. American Fish Hawk or Osbrey. Rather common during migrations along river. Rarely secn inland. I procured a specimen of the Osprey at this place, twenty-four miles from river, Sept. 1, 1876.

Family—*Striginæ.*

Genus—*Bubo.*

Bubo virginianus. Great Horned Owl. This, the largest of our American owls, is a common resident of this locality. Found in the heaviest timbered districts. Very shy and secluded.

Genus—*Scops.*

Scops asio. Mottled or Screech Owl. A common winter and summer resident.

Genus—*Otus.*

Otus Wilsonianus. Long-eared Owl. Not common, occasionally found in prairies though generally noticed in wooded portions.

Genus—*Brachyotus.*

Brachyotus Cassinii. Short-eared Owl. Rare, have found this species only on prairies, never yet in woods.

Sub-Family—*Syrninæ.*

Genus—*Syrnium.*

Syrnium nebulosum. Barred Owl. A common species, more often seen in woods than the great horned owl.

Genus—*Nyctale.*

Nyctale acadica. Saw-whet Owl. This diminutive owl is a rare visitor here, only one specimen as yet noticed.

Sub-Family—*Nycteinæ.*

Genus—*Nyctea.*

Nyctea nivea. Snowy Owl. Very rare, sometimes seen during unusually severe winters.

[Continued.]

Conchology.

Notes on the Coral Reefs of Florida.

BY W. W. CALKINS, CHICAGO, ILL.

No one can properly appreciate the immense extent of the work performed by that seemingly insignificant little *Polyp*, called the coral insect, until he or she has stood on those sunny strands of our country known as the Florida Keys, or what is better, sailed around and among them and gathered with the hand the living coral from its native home. Tortugas Keys, which form the last link in the long chain stretching from Key Biscayne and Cape Sable southwards conformable to the mainland from which they are separated by only a narrow space of shallow water, affords peculiarly rich developments of carol. In almost any portion of Tortugus Harber one can gather a number of species with a common boat-hook or by hand, in case you keep one eye open for sharks, some of whom are very fond of *calves*. The *Astrean* corals frequently grow in places just covered by low tide. So with *Manicina*. But the best collecting grounds are found in from ten to fifteen feet of water. In 1875 I collected the following species at Tortugas and elsewhere among the Keys: *Manicina areolata*, Ehr. *Siderastrea radians*, Verl. *Millepora alcicornis*, L. *Porites clavaria*, Lam. *Colpophyllia gyrosa*, E. & H. *Madrepora palmata*, Lam. *Madrepora cervicornis*, Lam. *M. prolifera*, Lam. *Astrea ananas*, Lam. *Meandrina crebriformis*, L. *Siderastrea siderea*, Blainv.

These are all known as Reef-building corals. The living species of to-day differ in no way from their ancestors of thousand

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of years ago who were instrumental in building up the Florida Reefs which underlie a large part of the state. I have myself come to this conclusion from an examination of fossil corals found in the interior. This fact does not, however, prove the immense age of Florida as argued by the late Prof. Agassiz. The conditions were no doubt different when the earlier reefs began to grow. The whole peninsula was, undoubtedly, at that time washed by the waters of two seas —the Atlantic and the Gulf. I think this can be proved by very good evidence. For instance, many species of shells, common on the Atlantic side of Florida, are not found at all on the Gulf or west coast; but when one follows the Gulf westward to Galveston, here are seen again the Atlantic forms. This curious fact points to one conclusion, that the Atlantic waters once rolled across the nothern part of Florida bearing westward the Atlantic fauna, which, encountering the Gulf stream and other foreign conditions sweeping around the west Florida coast northwards, were unable to survive, but found a congeneal home farther away from these influenccs. Another proof of the late formation of Florida is, the low level of the state and its slight elevation above the sea. The casual observer would say that but a few thousand years would be necessary to bring it to its present condition—judging by appearances. My first supposition being true, however, the theory that the peninsula was gradually extended southwards by consecutive reefs, one being finished, or nearly so, before another was begun, as asserted by Agassiz, must fall to the ground. Granting that a constant supply of fresh sea water is necessary to the successful growth of coral reefs, we have this requisite supplied on the basis of my proposition. This being so, scores of coral reefs were being built at the same time. I think there is no doubt of this. No positive data can, of course, be had as to the time necessary to complete a reef of say one hundred feet of thickness. That being the greatest depth at which the reef coral builders can work. But that reefs grow more rapidly than formerly supposed there is no doubt. Such being the case, when we consider the additional agencies brought in as the reef approaches the surface of the sea to assist in the last act of making it dry land, we may conclude that continent building in Florida has not, after all, been so slow. There are many interesting facts about corals and coral reefs which I have not time now to consider.

Meteorology.

Local Meteorology.

The Academy of Sciences, met at the Polytechnic Institute. Monday night January 21st, ten members being present including Dr. George Engelmann, Prof. Nipher, Judge Holmes, Prof. Potter, Dr. Sanders and Messrs. H. W. Tivy, Theodore Linck, and O. W. Collet. Mr. H. T. Woodman, of Dubuque, was also present.

The corresponding secretary presented the academy with a number of scientific magazines and papers received by him the past month, and called the academy's attention to an article in one of them about the vertibrate remains in the phosphate beds of South Carolina, and giving Dr. Leidy's conclusions in regard to them,

Mr. Collet presented the academy with an old work on chemistry by Wm. Gregory.

The secretary was instructed to subscribe for a copy of a catalogue of scientific serial publications published by Harvard College.

Prof. Potter exhibited some specimens of spiegel-eisen covered with graphite. The coating was done by nature, the professor said. The specimens came from the Vulcan Iron works, situated at South St. Louis.

Dr. Engelmann presented his weather report for the month of December. The mean temperature for the month was 46.8 degrees, which was 13.2 degrees above the mean temperature for the last forty-two Decembers, 23.5 degrees higher than the mean temperature of the coldest December since 1842, and 4.9 degrees above the mean temperature of the warmest December in forty-two years. Judging from the weather observations for the past forty-two years. Dr. Engelmann looked for a mild January and a doubtful February, and in case both months proved to be mild ones, then a cold March and a late spring.

Specimens of ceral growth were presented by Mr. Hilder and by Mr. Woodman, of Dubuque.

An old fiddle with a mud-dauber's nest in it was also exhibited. The violin once belonged to Lipensky, the celebrated violinist of Dresden. It was brought to America about fifty years ago by a relative of its original owner, and lay in disuse the next thirty years, in a house in Washington County, Mo. It was then brought to St. Louis by Mr. P. G. Anton and has been in constant use ever since. The wasp nest must have been built in the violin some twenty years ago, but was not discovered until a short time ago, and the fiddle with its load of dry mud was then sent to Prof C. V. Riley for examination.

Meteorology.

Much credit is due Prof. F. Nipher, for his exertions toward establishing a volunteer Weather Service in Missouri. We have just received a summery of the observations made in December last, together with two charts, showing temperature, rain-fall &c. The December just past is remarkable for its abnormal temperature; the mean temperature at St. Louis being 45 degrees, which is 12 degrees above the norman December, and 2 degrees above the normal November. At Lexington and Clinton, Mo. rose, peach, lilic and other buds were unfolding, and at the latter place strawberries were reported in bloom. At St. Louis earth-worms came to the surface in immense numbers on the 24th, and frogs were heard on the 18th at Lexington and St. Charles, The rain-fall at St. Louis was 3.24 inches, a slight excess over the normal which is 3.03.

At St. Louis the highest temperature was 69 degrees on the 12th and the lowest was 19 degrees on the 2nd.

The total run of the wind for the month was 7742 miles; an average of 250 miles per day. The highest daily run was 495 miles on the 30th and the lowest was 117 on the 17th.

Geology.

Introduction.

It affords me the greatest pleasure to inform the readers of the VALLEY NATURALIST, that the publisher has decided to devote one column or more of his valuable publication to the subject of Geology. Under this head will be found descriptions of interesting fossil localities; notes on recent discoveries and explorations; short articles concerning minerals and their uses, and observations made by myself and others who I hope will contribute liberally.

Geology, as well as other natural sciences, may be said to be nothing more than a classified arrangement of facts and principles derived from observations and experiments made during a long series of years by many individuals. The apparently most trifling fact or principle, is therefore worthy of being treasured up for the benefit of the public. But if we should go beyond these facts, and begin to guess, we would be no longer scientific; and we would have a weak system, for it is a very weak system that can not stand up against anybody's guesses. Even the rough notes of the geologist concerning the drift, glacier markings, erosion, sand shifts &c., when dotted down at the time of observation, are very valuable and highly interesting.

With the aid of liberal contributors we will aim to make this department not only interesting, but also instructive.

Yours respectfully,
Grand Rapids, Mich. W. H. HUGHES.

Drift of Michigan.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

Nearly all parts of the peninsula are covered with an accumulation of gravel, clay and sand without any regular order of stratification. We generally find at the surface a layer of sand extending downward sometimes to a depth of 75 feet, oftentimes thin sheets of clay will be found running through the sand.

The material at the bottom of the drift is generally made up of large beds of clay and pebbles, also boulders of hornblendic, micaceous, granitic, and quartzose rocks. Prof. Winchell, in speaking of the drifts, says:

"Their average thickness in the Grand Traverse Region is unknown. It is probable however, that they are 50 feet thick at Northport, 60 at Sutton's bay, 100 at Traverse City, and from two to four hundred in the interior of Leelenaw and Benzie counties."

During the summer of 1876 a shaft was sunk at Big Rapids, Mich. to a depth of 242 feet. The first 20 feet was through fine yellow sand, the next fifty-six feet through very loose quick sand and water, at this point, (76 feet) a bed of fine compact gravel was struck and numerous specimens of Black Bituminous Shale were taken out. At 92 feet they were still in the gravel, and some fine specimens of quartziferous and micaceous rocks were obtained; at 116 feet a bed of clay was found containing small pebbles, and from this point to 240 feet there were alternate beds of sand, gravel and boulder clay; at 241 feet the clay contained a large amount of sand, and stratification was distinctly marked.

Erosion.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

There are very few, if any readers of the VALLEY NATURALIST, who have not noticed the erosion or war, which is constantly going on wherever the waters have motion. Small streams carry off sand and light pebbles, and deepen their bed, also the rill and rivulet, as may be seen on the roadside after a rain storm.

Rapid rivers wear with far greater power, tearing up trees, displacing rocks, and in time cutting deep gorges in their course, smoothing ann polishing the rocks, which are too firm to be detached by the force of the water.

I was shown a specimen of coal not long ago, which had been polished by the action of the water, until it was nearly as reflective as a mirror.

Even the hardest rocks are worn and polished by water, as may be noticed in the pebbles bordering every stream, at sometime they were irregular fragments which have been broken from rocks, and by being carried along by the stream, came in contact with other hard substances and have gradually become rounded and polished.

CORRESPONDENCE.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

Ed. Valley Naturalist:

Your valuable paper came to hand this morning. I would be much obliged if you would kindly name for me the oak sent by to-day's mail. A new species of *Colaspis* lives on this oak in Grand County, New Mexico, near the Gila Mines. C. F. Gissler, Brooklyn, N. Y., Jan. 6th, 1878.

Answer:—According to Dr. Engelmann, our greatest authority on American Oaks, the species sent is a variety of *Quercus undulata*, Torrey. The proteau forms of this species have long puzzled the botanical student. In the Herbarium these forms appear distinct enough, and botanists have even been let to devide them into several supposed species, based upon characters which prove very unreliable when brought to the test of an extended series of specimens. In the valleys and mountain slopes, this oak usually has leaves 3 to 4 inches long and rather deeply lobed; on the poorer soil the leaves are about 2 inches long, not lobed, but coursely dentate, while in exceedingly rocky places, the leaves are only about 1 inch long, with a few spiny teeth. Dr. Engelmann, in a recent paper on this genus, says that " within the compass of a few hundred yards, we find not only the forms above distinquished, but numbers of others which are neither the one nor the other, but which are intermediate between them and clearly unite them all as forms of a single extremely polymorphous species."

Ed. Valley Naturalist:

Last season I observed for the first time the branching spikes of *Plantago mayor*. The plants are rather dwarfed in appearance, leaves nearly acute, five ribbed, the spike usually having three branches. Are the plants found in this locality, the common type of the new form? To what is the change of form due. Respectfully yours,

Rome, Pa., Jan. 20, '78. Lilian M. Ridgway.

Answer:—You will find a series of notices of this variation in the Botanical Gazette, vol. II, pp. 45, 60, 135. The number of branches is by no means constant, varying from two to ten. We are unable to assign any reasons for this change of form, but think that in the majority of cases it will be found to be due to some injury to the young spikes.

A. S. Van Winkle: on account of an accumulation of articles, we were unable to publish your article on "Entomological Notes," in this issue.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

THE BIRDS OF NORTH AMERICA, by SPENCER F. BAIRD, Assistant Secretary of the Smithsonian Institution, with the co-operation of JOHN CASSIN, of the Academy of Natural Sciences, of Philadelphia, and GEORGE N. LAWRENCE, of the Lyceum of Natural History of New York. With an atlas of one hundred elegant plates.

The present work is, in part, a reprint of the general report on North American Birds presented to the Department of War, and published in October, 1858, as one of the series of "Reports of Explorations and Surveys of a Railroad Route to the Pacific Ocean." In these volumes, however, will be found many important additions and corrections. The atlas contains one hundred plates, representing 148 new or unfigured species of North American Birds, of these plates about fifty appear for the first time, having been prepared expressly for this work. The remainder form the ornithological illustrations of the reports of the Pacific Railroad and United States and Mexican Boundary Surveys, and are distributed throughout the numerous volumes composing those series, All have, however, been carefully retouched and lettered for this edition, and quite a number re-drawn entirely from better and more characteristic specimens. In fact, the plates have been prepared expressly for the present edition, with the utmost care, and embrace one hundred species of birds not figured by Audubon. In the volume of text will be found a complete account of all the birds of North America, brought down to the present time, including accurate descriptions of all known species; their arrangement in the genera and families recognized by modern zoologists; their geographical distribution, and as far as possible, all other information necessary to a complete summary or manual of North American ornithology, have been added, and will be found to be of high interest to the student and naturalist.

AMERICAN JUNIPERS OF THE SECTION SABINA. By DR. GEORGE ENGELMANN. (From the Transactions of the St. Louis Academy of Sciences).

In this paper Dr. Engelmann gives the following arrangement of the American species:

I. SABINÆ, with large, reddish-glaucous, fibrous, dry, sweetish berries. A. Seed single or few; leaves fringed or denticulate.

a. *Cotyledous* 4-6. *Juniperus californica.*

b. *Cotelydous* 2. *J. Mexicana.*

B. Seeds numerous 4-12; leaves slightly denticulate. *J. pachyplora. J. flaccida.*

II. SABINÆ, with smaller, bluish black, (rarely brown) pulpy berries of resinous taste.

A. Leaves ciliate or buticulate. *J. occidentalis. J. conjungens. J. tetragona.*

B. Leaves entire or nearly so. *J. sabina. J. virginiana. J. bermudiana.*

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This column is established for the benefit of those who may wish to buy, sell or exchange insects, plants, bird-skins, books, reports, etc. The price for insertions under this head is ten cents per line, from seven to nine words to the line, for each insertion.

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SCIENCE

THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., MARCH, 1878. NUMBER 3.

THE

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Academy of Sciences.

A regular meeting of the Academy of Sciences was held Monday night, February 18th, at Polytechnic Hall, Dr. Engelmann in the chair.

Judge Holmes, the Corresponding Secretary, submitted letters from various points, among them one from J. Cockrell, of Ravenna, Ills., offering to furnish the Academy with an account of the ancient mounds in that neighborhood. Judge Holmes also laid before the Academy various society publications from all parts of the world.

Dr. Engelmann handed in a contribution of lead and iron ore specimens from the mines of Madison County, Mo., on the banks of the St. Francis River. They were a gift to the Society from Mr. Wm. Einstein.

Mr. Collett laid before the Society what had been handed to him as a petrified potato.

Judge Holmes submitted a brief review of a recent report of the Curator of the French Academy of Anthropology.

Mr. Collett brought to notice some of the common errors of closet naturalists, who drew their information from books and not from nature.

Dr. Kinner read a paper on the *Menobranchus*, which include the family of water lizards. He submitted to the notice of the members two specimens from the Mississippi River, one alive and the other preserved in spirits, calling attention to their peculiarities and differences.

Prof. Nipher of the Washington University, gave the results of his experiments in ascertaining the rainfall on roofs, making clear the results of his efforts by the aid of charts.

Mr. M. W. Leffingwell was elected a member of the Academy, following which the meeting adjourned.

To Correspondants.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

Entomology.

List of the Khopalocera, Occurring in Bastrop County, Texas, as Observed During the Years 1867-77.

BY L. HEILIGBRODT, BASTROP, TEXAS.

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common, and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Papilio aja, Linn. r.
" *philenor*, Linn. c.
" *asterias*, Fabr. c.
" *troilus*, Linn. r.
" *turnus*, Linn. n. c.
" *palamedes*, Drury. r.
" *cresphontes*, Cram. n. c.
Pieris monuste, Linn. r.
" *protodic*, Bd. Lec. v. c.
Nathalis iole, Bd. v. c.
Anthocharis genutia, Bd. v. r. (esp. female.)
Callidryas cubule, Linn. v. c. } one species.
" *sennæ*, Linn. v. c. }
Gonepteryx lyside, Godt. r.
Colias cæsonia, Stoll. c.
" *eurytheme*, Bd. c.
" *keewaydin*, Edw. n. c.
" *philodice*, Godt. v. c.
Terias nicippe, Cram. v. c.
" *mexicana*, Bd. r. (common in 1875.)
" *lisa*, Bd. c.
Danais archippus, Fabr. v. c.
" *berenice*, Cram. c.
Colœnis julia, Fabr. v. r.
Agraulis vanillac, Linn. c.
Euptoieta claudia, Cram. c.
Phyciodes nycteis, Doub. n. c.
" *phaon*, Edw. v. c.
" *batesii*, Reak. v. c.
Eresia texana, Edw. n. c.
Lynchlœ adjutrix, Scud. v. c.
Cystincura amymone, Men. r.
Grapta interrogationis, Fabr. c.
Venessa antiopa, Linn. n. c.
Pyrameis atalanta, Linn. c.
" *cardui*, Linn. v. c.
Gunonia lavinia, Cram. c.
Timetes chiron, Fabr. v. c.
Limenitis disippus, Godt. r.
Apatura celtis, Bd. c.
" *clyton*, Bd. c.
Paphia andria, Scud. v. c.
Neonympha eurytris, Fabr. c.
" *sosybius*, Fabr. c.
Satyrus pegala, Fabr. n. c.
Libythea Bachmanni, Kirtl. n. c.
Thecla halesus, Cram. r. (two broods.)
" *autolycus*, Edw. c.
" *humuli*, Harr. c.
" *strigosa*, Harr. c.
" *smilacis*, Bd. n. c.
" *pocas*, Huebn. c.
Lycæna comyntas, Godt. c.
" *alce*, Edw. v. c.
" *gyas*, Edw. r.
" *fea*. Edw. c.
Ancyloxypha numitor, Fabr. n. c.
Copacodes procris, Edw. c.
Pamphila huron, Edw. c.
" *phylacus*, Drury. v. c. (female r.)
" *brettus*, Bd. Lec. n. c. (fem. v. r.)
" *peckius*, Kirby. n. c.
" *accius*, Sm. Abb. r.
" *osyka*, Edw. n. c.
Amblyscirtes vialis, Edw. n. c.
" *samoset*, Scud. v. r.
Pyrgus tessellata, Scud. c.
Thanaos juvenalis, Fabr. v. c.
" *funeralis*, Scud. Bug. v. c.
Pholisora catullus, Cram. c.
" *hayhurstii*, Edw. n. c.
" *nessus*, Edw. r.
Eudamus pylades, Scud. n. c.
" *bathyllus*, Sm. Abb. c.
" *lycidas*, Sm. Abb. r.
" *epigena*, Butl. v. r.
" *proteus*, Linn. r.

The Brushes of the White-Marked Tussock Moth.

[*Orgyia Leucostigma*, Smith & Abbott.]

BY C. G. SIEWERS, NEWPORT, KY.

The larva of this moth, the pest of our shade trees and doorways, is really one of the handsomest and most unique of all that class of caterpillars that annoy us by their numbers. The three long tufts of hair; the remarkable close-set brushes on the fourth, fifth, sixth and seventh segments, and the beautiful bright-red colorations on the dorsal line of the hind segments, looking like glowing rubies; with its neat lateral lines and markings, will—on close inspection—be found a pleasant surprise to any one who may have judged it too common to notice. Its use of the four brushes on its back—which no brushmaker could improve on—has long been an object of surmise, which I have been enabled to solve by a mere accident; desiring to sketch it, I took a full grown one from the pavement, but found it impossible to quiet it, as it was in search of a place to "spin up." I finally put it on the edge of a tumbler, where it travelled around for some time and then stopped, when throwing back the fore-part of its body till the brushes rested on the hind segments, it worked them violently from right to left, evidently to cleanse its "beauty spots." This it repeated several times after long tramps.

Now, though larvæ have no apparent sight [?] at this time, there are those who believe that they at one time had, but finding it useless, and the organs open to parasites, they gradually dispensed with them. Might not this brushing be styled a case of inherited vanity?

PERSONS receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription. With your aid, we hope soon to be able to enlarge the NATURALIST to double its present size.

Conchology.

A Naturalist in Florida—Cruise of the "Rose Bud."

BY W. W. CALKINS, CHICAGO, ILL.

[Paper No. 1.]

It was my good fortune—in the winter of 1875—to be one of a party of three gentlemen, sent out by the Chicago Academy of Sciences on an expedition to the Florida waters for the purpose of collecting objects of Natural History; such as Shells, Birds, Fish, Crustacea, etc.

We proposed to secure anything of scientific interest that might be available. Leaving Chicago about the 10th of January, when the thermometer marked fifteen below zero, by rail for New Orleans. We were prepared to appreciate the sudden change from the frozen North to the milder atmosphere of the South.

Three days journey found us bag and baggage—about half a car load—in the commercial center of the Gulf States. As the steamer "Clyde" was to sail on the day after our arrival for Key West and Havana, we had only one day in which to investigate the City of New Orleans. But I saw enough to satisfy me of its greatness and its peculiarities as well, among the latter may be mentioned the old time buildings and the narrow streets, some of them having the appearance of a venerable antiquity. But above all the saucy independent air of the people was and is quite remarkable. Every nation under the sun seems to be represented and the *Genus Homo* in its numerous varieties affords here an interesting study which I would be delighted to improve. However, on the occasion referred to, we were obliged to defer any proposed investigations, and the next day embarked on the "Clyde" for a journey of seven hundred miles around the Gulf to Key West. Thus far we had, of course, collected very little of interest to a naturalist—it being our intention to reach headquarters at Key West as soon as possible and begin operations at that point.

The voyage down the river occupied one day. To our chagrin, a dense fog hung over the river and shut out the view of the country as we passed down. We saw now and then, however, orange groves and gardens of bananas. These and the interminable cypress swamps, with the peculiar parasite (*Tillandsia usneoides*) hanging from every bough presented a truly tropical appearance. It was 10 o'clock on the following day before the fog lifted enough to run out "Pass a Ontre" with safety. We were soon on the blue waters of the Gulf of Mexico. The contrast were the ever turbid Father of Waters meets and mingles its floods with those of the sea is striking and grand. The view may be compared to that of two contending armies in close and mortal conflict. The line of demarcation is ever there, clear and distinct. The two elements seem to fight for the master, but neither to gain the victory or advance one foot. Imperceptibly the mighty current is lost in the bosom of the mother ocean, while almost as quietly we sail further and further away until all around us appears only the blue vault of heaven above. Once fairly at sea we settled down to our new situation with a rapidity that was astonishing. The weather was delightful. Our course lay due east for Cedar Keys where the vessel stopped to leave the mail on her weekly trips. The "Clyde" was small and narrow with state rooms on deck so that we could sit outside in fair weather and make observations. We had the good fortune not to encounter any *blows* or, I imagine, that a lower cabin would have been preferable. I had been at sea several times before so had my companions, but all of us avoided at first one delicate subject, seasickness. However we escaped, and this terror being avoided we were ready to enjoy anything from a good dinner to a shot at a porpoise. Schools of these followed and played around the ship. They afforded amusement. We often occupied hours in watching the Jelly fish of which there were millions floating around. The curious "Portuguese Men of War" (*Physalia pelagica*) were a novelty. Their "float," which resembles a miniature boat, is of the most beautiful blue imaginable. From this float depend the wonderful colony of almost microscopic animals, looking like a number of black threads hanging down several yards. There are millions of these attached to each boat, united yet distinct; they look beautiful and harmless, but woe to the unlucky hand or member that comes in contact with them. Amateur naturalists beware! The result is instant paralysis of the limb, which sometimes extends to the whole body; I was warned in time to save my bacon, and found that "Distance lends enchantment to the view," truly in the case of these animals. Nature has, with usual forethought, given them this means of making an honest living by stinging their prey as well as for defense. Thousands of their barques are often blown ashore in tropical latitudes, along with their owners, in fierce storms. They are then helpless and do no harm when touched. As we moved on toward the "Land of Flowers" the character of the surface *fauna* became more and more tropical in appearance. The sea weed, (*Sargassum bacciferum*), floated around in unusual quantities, and we had an immediate anxiety to secure specimens as we knew that numerous Crustaceans besides mollusks inhabit it. After many attempts I succeeded, with the assistance of a sailor, in securing a piece. But I found no animals upon it. However it was something new and was carefully saved until further opportunities were presented for getting good specimens. We left New Orleans on Wednesday, and on Friday night anchored off Cedar Keys, about ten miles out, as our vessel could not go in with safety through the narrow channel. Daylight on Saturday found us on deck to behold a view I shall never forget. In the distance we could discern the town and mainland. Near us lay a dozen small "keys" or islands—all clothed in emerald beauty. On the keys appeared the low scrubby growth of Mangrove (*Rhizophora.*) The stately palm (*Sabal Palmetto*) or Cabbage Palmetto, lined the distant shore of white sand. The sight was novel and rendered most enchanting by the loveliness of the day. Having only a few hours we dared not go ashore. Meantime I got out a small dredge and line and began operations in six fathoms of water by casting the dredge off from the deck of the steamer and then hauling in. The passengers gathered around while the sailors lent a kindly hand. I never ascertained whether they believed in my lunacy or not, but the result surprised every one as well as myself, when the dredge being emptied into a pail revealed several small live shells, mollusks, crustaceans, and a Star fish. The operation was repeated many times with success. I secured about a dozen species in all, enough to encourage further efforts. The mails being exchanged the steamer got under way and headed directly south for Key West. From Cedar Keys the trip was more delightful if anything than before. Most of the time we were out of sight of land but occasionally caught a view of the low shore line with the characteristic Palmetto. About ten o'clock on Saturday night Tampa was passed and the Light-house on Egmont Key sent forth its welcome flash of light over the blue waters of the Gulf like another Pharos to Guide the mariner on his way. We were now approaching a region of perpetual summer, where frost is never known and the balmy air is never disturbed save by an occasional cold blast from the North, which is modified by the warm influences of the Gulf and Gulf Stream. The latter sweeps up around the southern end of Florida, and even so far north as Cedar Keys exerts a perceptable influence on the distribution of the marine fauna of this shore, giving it a character unknown on the Atlantic side, where the tropical forms are crowded off by the cold waters of the Atlantic intervening between the Gulf Stream and the land. Hence the difference in the fauna of the two sides of the peninsula. After dark we sometimes spent hours in watching the phosphorescence of the sea. This curious phenomenon is produced by myriods of creatures, principally *infusoria*, which live in all tropical waters. The *Noctiluca miliaris*, are the most abundant; they are so small that 50,000 can live with comfort in a common wine glass. But the effect is increased by myriads of other creatures, such as star fish, medusæ, mollusks, etc., all of which have the power to evolve light or electricity. The least agitation sets the whole in motion; lights of blue, green and red succeed and intermingle in the greatest variety, making up a seen which I can only compare to the starry heavens in grandeur. Another wander of this region is the Flying fish (*Exocœtus*).

Having never seen them before I easily mistook them for birds; rising from the waves, they would fly sometimes two or three hundred feet with great facility; there are many species of these. Thus we passed the days of our voyage, ever seeing new wanders as our ship sped onward. At last on Sunday night we anchored off Key West Light. On Monday morning we steamed into the harbor and were soon ashore in the City of Key West. Every thing was new and strange; people were walking about with umbrellas or in their shirt sleeves. The thermometer stood at eighty above zero. Having registered at the hotel, I started out to survey the town but soon became so heated that I was glad to sit down under the shade of some Cocoanut Palms (*Cocos musifera*) to cool off. These trees are a prominent feature on the island and may be seen anywhere. They are in a constant state of fruition throughout the year. They grow to a height of 40 or 50 feet without a limb; the bark is almost smooth and the body composed of pithy fibre. From the extreme top, large fronds or leaves shoot out in tufts; at the base of these fronds the fruit grows. The tree requires no soil as we understand it here. If they did, Key West could furnish very little of the genuine article, being composed entirely of limy formations derived from shells and corals. This is only one of the many vegetable wonders to be seen in this part of the world. Finding so much of interest I must defer further mention of Key West to a future time. Being anxious to visit Tortugas, arrangements were made at once with the owner of the schooner "Rose Bud," a neat little craft of eight tons measurement, with a crew of two men, to which we added Erebus the cook, and in two days we were again sailing southward.

Botany.

Botanical Monstrosity.

In the January number of the VALLEY NATURALIST we gave a description of an apple monstrosity discovered by Professor Leigh, since then we have noticed a very interesting account of a somewhat similar monstrosity by Prof. B. Auerswald (Anleitung zum Rationellen Botanisiren. Leipzig, 1860). Supposing that it would be of interest to many of the readers of the VALLEY NATURALIST; we give below a short summery of the salient points in his description. This apple is known as the "Fig-apple" or "Pommier de Saint Valery" (*Pyrus dioica*, Willd.) and is a truly abnormal variety of the common apple tree (*Pyrus malus*). The petals are transformed into small calyx-like organs and all the stamens are changed into pistils. The experiment was made by artificially fertilizing these flowers with pollen from other trees, and it was found that the apples varied in taste, color and size; according to what variety of apple the pollen was taken from. A little above the middle the apples show a contraction, dividing the apple into two parts, each of which, as in Dr. Leigh's specimens, contain a separate "core." Professor Auerswald gives the fol-

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lowing explanation of this abnormal structure: "In the normally formed apple flowers the style stands on the base of the fleshy calyx tube, and the stamens upon its upper margin; if now we change the stamens into carpels and the calyx to 'apple-flesh,' it is evident that there will be a normally five-celled inferior 'core' and a 'core' above, which in these specimens is nine-celled."

J. M.

Synopsis of the American Firs.

BY DR. GEORGE ENGELMANN.

(*Trans St. L. Acad. Sc.*)

As this paper has been printed for private distribution, and will not appear for sometime in the Transactions of the Academy, we give the synoptical arrangement of the species, thinking that it will be of interest to many readers of the VALLEY NATURALIST, who might be unable to obtain a copy of this article. Dr. Engelmann follows Link in his name, definition and circumscription of the genus, comprising the Silver or Balsam Firs. The leaves of all Firs are sessile and without the prominent ligneous cushion, which is peculiar to the spruces (*Picea*, Link). All the leaves have stomata on the underside, forming bands on each side of the keel; on the upperside of the leave, stomata are present in some, especially in those with thicker leaves, and absent in others, mostly those with flatter leaves. In several species the leaves of the lower or sterile branches are without stomata and the thicker ones of the upper or fertile branches have a few (in the upper part of the grove) or many. The fibro-vascular bundle occupies the center of the leaf, either single—in the more square leaves of the 4th section—or mostly divided into two distinct bundles (in the flat leaves). Both cases occur sometimes in the same species:

Sec. I. BALSAMEÆ. Resin ducts within the parenchyma, in the interior of the leaf; leaves on lower branches notched and mostly without stomata on the upper side, on fertile branches entire, obtuse or often acute; mostly with a few or more stomata above, toward the tip. Two Eastern and one Northwestern species.

* *Exserta:* bracts protruding, recurved.

1. *A. Fraseri.*

** *Inclusæ:* bracts shorter than the scales.

2. *A. balsamea.*

3. *A. subalpina.*

Sec. II. GRANDES. Resin ducts close to the epidermis of the lower side toward the edges; leaves on lower branches notched or obtuse; on upper, obtuse, rarely ever acute; bracts enclosed, Two Western species.

4. *A. grandis.*

5. *A. concolor.*

Sec. III. BRACTEATÆ. Resin ducts as in last; upper side of the rigid, mostly acute, leaves without stomata, with a continuous layer of hypoderm cells, usually similar cells within the sheath of the fibro-vascular bundle; pallisade-parenchyma very strongly developed; bracts exsert. One Mexican and one Southwestern species.

6. *A. religiosa.*

7. *A. bracteata.*

Sec. IV. NOBILES. Leaves of the adult tree and especially of the fertile branches quadrangular, short, curved, but scarcely twisted; resin ducts close to the epidermis of the lower side, and equidistant from the edge and keel; fibro-vascular bundles single; stomata on both sides; leaves of young trees much like those of Section II. Two species of the higher mountains of the Pacific slope.

* *Exserta:* bracts protruding.

8. *A. nobilis.*

* *Inclusa:* bracts shorter than scales.

9. *A. magnifica.*

FIGS grow very abundantly in South Carolina; they ripen twice a year, and compete, when dried and packed, with the foreign imported ones in the home market.

Ornithology.

Birds of St. Clair County, Ills.—III.

BY WM. L. JONES, LEBANON, ILL.

Order—*Scansores.*
Family—*Cuculidæ.*
Genus—*Coccyzus.*

Coccyzus americanus. Yellow-billed Cuckoo. A common summer resident; arrives here about May 20th, generally departs before frost.

Coccyzus erytrophthalmus. Black-billed Cuckoo. A rare bird compared with the preceding species.

Family—*Picidæ.*
Genus—*Picus.*

Picus villosus. Hairy Woodpecker or Sapsucker. A very common resident, seem to be more abundant during winter season.

Picus pubescens. Downy Woodpecker. A common species, most commonly seen in vicinity of orchards.

Genus—*Sphyrapicus.*

Sphyrapicus varius. Yellow-bellied Woodpecker. A rather rare Woodpecker here, noticed more plentiful last autumn than ever before.

Genus—*Hylotomus.*

Hylotomus pileatus. Logcock or Pileated Woodpecker. Rare, inhabits heavy timber, very shy.

Genus—*Centurus.*

Centurus carolinus. Red-bellied Woodpecker. A common species, seen everywhere in woods.

Genus—*Melanerpes.*

Melanerpes erythrocephalus. Red-headed Woodpecker. Very common, most abundant of all Woodpeckers here in this County.

Genus—*Colaptes.*

Colaptes auratus. Golden-winged Woodpecker or Flicker. A common resident, usually more abundant in summer.

[Continued.]

Birds of Michigan.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

C. aura. Turkey Buzzard. This species is named as occurring in this State, in the list of the Michigan University. A specimen was shot at Kalamazoo several years ago; it is not known to have been observed in this County (Colhoun), but is unquestionably an occasional visitor. Its natural home is in the Southern States, where it is protected, by common consent, for its usefulness in acting as a scavenger in carrying away and feeding upon the refuse animal matter in the streets. There are three other species of the American Vultures, all belonging to the genus *Cathartes*, but their home is in the warmer climate of the South, and they never visit us.

The Falcon family is more numerous and is well represented in Michigan.

F. Sparverius. Sparrow Hawk. This beautiful hawk is not a very common summer resident, is easily recognized by its small size, measuring only twelve inches in length, its food is grasshoppers, snakes, mice and occasionally a small bird. It breeds in this county.

A. Cooperii. Cooper's Hawk. The most common, perhaps, of all our hawks, is about sixteen inches in length, and is one of the species known as "hen hawks." They built their nests in trees, and the eggs are white.

A. Fuscus. Sharp-shinned Hawk. A common summer resident, is about fourteen inches long, nests here, and is easily distinquished by its slender legs and toes.

B. Borealis. Red-Tailed Hawk. A large rare species, twenty-four inches in length, easily identified by the bright rufous tail, tipped with white.

B. Lineatus. Red-shouldered Hawk. Rather common inhabitant, about twenty-two inches in length. The most marked peculiarity is the bright rufous feathers at the elbow of the wing.

A. Sancti johannis. Black Hawk. Very rare, is about twenty-two inches in length, with black or dark brown blumage.

C. Hudsonius. Marsh Hawk. One of the most common hawks, and nests on the ground.

A. Canadensis. Golden Eagle. Very rarely seen.

H. Leucocephalus, Bold Eagle. Very rarely seen, but the most common of the eagles. It breeds in this region.

P. Carolinensis. American osprey. Very rare, but is often seen near the great lakes.

A Queer Nesting-Place.

BY G. H. RAGSDALE, GAINESVILLE, TEXAS.

While collecting birds and eggs during the season of 1877 I picked up a nest lying on the ground in Fish Creek Bottom near its junction with Red River; the most singular birds nest I have ever seen. It was simply a small nest about the size of *Polioptila Cærulea*, in a bundle of caterpillar webs, and the dead leafless stems of the hickory upon which the worms had subsisted. The nest was perfect and had evidently been built after the worms ceased to use the webs. I sent it to Mr. J. A. Allen, Cambridge, Mass. but he could not make it out, thought it probably the nest of *Icterus spurius*, var. *affinis*, around which the caterpillars had wound their web, but it evidently was not, for the cavity of the nest had no web over it. Have you or any of your readers seen a similar nest?

Geology.

Terrestrial Magnetism.

BY PROF. RICHARD OWEN, INDIANA STATE UNIVERSITY, BLOOMINGTON, IND.

The following is a brief synopsis of some experiments, recently made by me in Terrestrial Magnetism, chiefly with reference to its bearing on Dynamical Geology. The full details I have recently made public in six articles written to the *Indianapolis Daily Journal* as the most readily accessible, to be followed by one or two more communications.

I. By driving iron rods at least six feet into the ground, and attaching to the rods insulated copper wire, connected also with a delicate Galvanometer, I have found so-called currents of electricity in the earth's crust, usually in a direction from South to North; sometimes from S. E. to N. W. or again from S. W. to N. E. The amount of deflection of the Galvanometer needle or index, when both wires are clamped in the binding screws of the Galvanometer, varies from about 12 to 25 degrees.

II. When *both* metallic objects with which the wires are connected are *above* ground, such as stoves, iron fences, &c., the currents appear also usually to be from a southerly to a northerly direction.

III. When one wire connects with a metal surface *under* ground, as an iron oil tank, while the other wire is connected with metal surface *above* ground, such as a stove with a long pipe, the currents set invariably from the atmosphere to the earth; the deflection amounting to from 15 to 30 degrees.

IV. So far as observed, no matter what the weather, or which way the wind is blowing, the maximum deflection occurs in the mornings and evenings, while the minimum deflection is during a few hours near noon.

LATER.

Since the above was written, we have received the following additions from the Professor:

"I have had an opportunity of making hourly observations for two days, with rods driven in different directions, by which I incline to think the currents in any *given* direction vary as I said, with the hour;

being stronger in some directions in the morning and weaker about noon, as I stated. But, I incline to think, they are stronger in *forenoon* from S. E. or E. to N. W. or W; at *noon* from S. to N: in *afternoon* from S. W. to N. E."

Meteorology.

Missouri Weather Service.

We have just received a summery of the observations of the Missouri Weather Service, made in January last, of which the following is a correct report:

The mean temperature at St. Louis during the month of January has been 35 degrees, which is about the normal temperature. The highest was 56 degrees on the 17th, and the lowest was 7.5 on the 7th. The greatest daily range was 24 degrees on the 24th, and the least was 1 degree on the 30th. The average run of the wind was 255 miles per day. The rainfall was 2.8 inches, a slight excess over the normal. In the State the rainfall was least in the North, increasing towards the great rivers and towards the South, being greatest in the South-east.

On the 26th a storm entered the Western part of the state at 3 A. M. and traversed that part South of the H. & St. J. R. R., developing into a severe thunder-storm in the Central and Southern parts. The heavy snow of the 30th and 31st was confined mainly to the river counties South of St. Louis; further to the West the precipitation was mainly rain. A brilliant lunar halo on the 18th, was seen over the entire state. Coronæ and halves were generally observed on the 11th. An aurora was visible at Miami, 24th; at Louisiana, 28th. Fruit-buds of apple, peach, apricot were pronounced safe and very abundant.

Prof. Nipher's Rain Gauge.

At a regular meeting of the St. Louis Academy of Sciences, held February 4th, Prof. Nipher stated that he had devised a shield for his rain gauge, and had made very complete experiments with rain and snow. He found that a gauge, to be accurate, must be at a considerable height above the roof of a building, in order to obviate the effect of the wind, which strikes upward at the edge of the roof, which it first reaches, and making a curve, strikes the roof at a considerable distance from the edge. The gauge should therefore be elevated above the highest point of the curve, which the wind describes. He also gave some observations on the rainfall throughout the state during the past month, showing that the heaviest fall was in the southeastern part, and the lightest in the northern part of the state.

At the same meeting, Dr. Engelmann presented a statistical record published in Paris in the month of June, containing not only vital but Meteorological statistics. He called attention to the great difference between the temperature in various parts of that city. Although the terretory covered is comparatively small, the difference between temperatures at the various points was as much as eighteen degrees, showing what a large effect local surroundings have upon the atmospheric temperature.

Zoölogy.

Additions to the St. Louis Zoological Garden.

The wild animals purchased at the sale of Montgomery Queen's circus, arrived per Adams' Express from Louisville, February 23d, in good order, at the Fair Grounds. The two lions, having been purchased after the auction sale, are still behind, but will soon be here. The animals were enclosed in boxes, bored full of auger holes to admit the air.

On the cages being opened to the light, some of the wild travellers manifested great surprise on seeing new faces and taking in the novelty of a strange position. The pumas at first looked in a puzzled state of mind. The tiger-cats refused to get out of their boxes until a burning newspaper was applied to their rear and they were forced to admit to the cogency of the heated argument, and moved in their new quarters.

This kind of forced argument, said Mr. Kalb, is usually applied when they wish to drive an obstinate tiger or lion from one cage into the other. The gazelles looked tired and palpitating after their tiresome journey, and behaved with docility and quiet resignation. It will take some time for these animals to get accustomed to their new homes.

It is intended to make new shelves for the pumas, so that they can perch higher and gratify their restless instincts in jumping about.

The editor of the *Turf, Field and Farm* from New York, visited the Fair Grounds in company with Mr. Hunt and expressed his surprise at the fine collection of animals, excelling in some respects what he had seen in France and England.

Talking about the sale, Mr. Kalb said a splendid rhinoceros, worth from $10,000 to $12,000, was sold for $3,500. An Asiatic elephant worth $7,000 or $8,000, brought only $1,500, and a horned horse, a very rare animal, sold for $1,200; a zebra for $250, and other animals at corresponding low prices. A wart hog, very rare, brought $190; three kangaroos sold for $82 apiece, and an eland, or horse antelope, brought $205.

Mr. Kalb coveted these bargains for our Zoological garden and regrets they were not secured.

THE "Albino Opossum" seems to make his appearance everywhere; Mr. C. E. Worthington of Chicago, Illinois, writes as follows: "Dr. Viele of this city, purchased a young male in the market last week, a beautiful specimen and a perfect albino from the tip of his nose to the end of his tail, with the regular pink eyes. The precise locality in which the example was shot is unknown."

THERE was an increase in the Zoological Collection at the St. Louis Fair Grounds last week, in the shape of a young Kangaroo, and in the spring it will rank among the chief attractions of the show, on account of the peculiar manner in which the mother carries it about and feeds it. The maternal one harbors it in a pouch, where it rides and feeds at will, when strong enough, it sometimes leaves the pouch in which it is carried, but whenever the least danger appears, it takes refuge in the mother's conveyance, not to re-appear until assured of safety.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

A REMARKABLE NEW GENUS IN MELOIDÆ INFESTING MASON-BEE CELLS IN THE UNITED STATES. By PROFESSOR CHAS. V. RILEY, Ph. D. (From the Transactions of the St. Louis Academy of Sciences.) With one plate.

While the natural history of none of our North American species of *Melœ* has been traced or recorded, they will, beyond all doubt, be found to agree with their European congeners in their partial parasitism on Mason-bees. In examining the cells of *Anthophora spousa*, Smith, Prof. Riley has so far failed to discover that *Melœ* is parasitic upon that species, *Melœ* is in reality very rare in St. Louis. He has, however, found on four different occasions in the Fall, within the sealed cells of the bee mentioned, a very interesting and anomalus *Meloid*, which may be taken to represent the typical partial parasitism of the family in the United States. There is a tendency in the family to wing reduction, but in no hitherto described species is the reduction carried to such extremes as in this, both sexes (Plate V,, Fig. 13.) having the elytra as rudimentary as in the female of the well-known European Glow-worm (*Lampyris nœtiluca*). Another characteristic feature is its simple tarsal claws, which, together with the rudimentary wings and the heavy body, show it to be a degradational form. The plate represents the Hypermetamorphoses of *Epicauta* and *Hornia*, and is beautifully executed.

THE FERNS OF KENTUCKY. A popular hand-book of the Ferns of Kentucky, by JOHN WILLIAMSON, of Louisville. Ky.

We have received the prospectus with two beautiful illustrations—Bristle Fern, (*Trichomanes Radicans*) natural size and magnified views of same—of this valuable book, to be published next May. The work will be illustrated with forty etchings by the author, giving a picture of every species and a magnified view of every genus found growing in that state. The illustrations will be scientifically accurate, being all drawn from nature, showing the fructification, so that the student or amateur will have no difficulty in recognizing each plant. A short essay on the cultivation of these beautiful wild plants will also be given, and directions of how to collect and preserve them.

WANT AND EXCHANGE COLUMN.

This column is established for the benefit of those who may wish to buy, sell or exchange insects, plants, bird-skins, books, reports, etc. The price for insertions under this head is ten cents per line, from seven to nine words to the line, for each insertion.

Tortricidæ Wanted.

I am desirous of obtaining as many North American *Tortricidæ* as possible for the purpose of studying this family.I shall be glad to name and return to any who will forward their *Tortricidæ* to me for this purpose, all save such as may prove new and desirable to retain for description. I should be pleased to correspond with any who intend to collect Lepidoptera in any part of North America where but little collecting has hitherto been done. Address,

PROF. C. H. FERNALD,
Orono, Maine.

Minerals and fossils wanted in exchange for the same. C. W. Tuttle, Hancock, N. H.

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Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., APRIL, 1878. NUMBER 4.

THE

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To Correspondants.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

W. W. Calkins, Esq.

The above named gentleman, of Chicago, Ill., is doing good work for Natural History; contributing regularly for at least half a dozen scientific publications, upon subjects of Conchology and Geology. Our readers will notice that we have published articles in every issue of the VALLEY NATURALIST, which he has kindly consented to contribute, and we hope he will continue to do so throughout its existance.

In our January issue we published an article on the "Multiplication of species in the families Unionidæ and Strepornatidæ," we also gave a notice of a publication by him upon "The Geological Formation of LaSalle County, and their Organic Remains." For the February issue he contributed an article entitled "Notes on the Coral Reefs of Florida." Also a small note on "*Ranella Clothrata.*" The March issue contained the first of a series of papers by him on scientific research and travel in Florida, entitled "A Naturalist in Florida." To be continued in several numbers.

As most of his time is occupied by his business—Lumber Merchant—he finds constant work for his copyist and secretary, Miss Jennie Calkins. And, to use his own words, "the printers are indebted for *plain* copy to his secretary."

We hope our readers, who are interested in the same branches of natural history will correspond with him, as well as contribute liberally to the VALLEY NATURALIST.

Directions for Sending Insects.

All letters desiring information respecting noxious and other insects, should be accompanied by specimens, the more in number the better. Such specimens should always be packed along with cotton, wool, or some such substance, in a little pasteboard box that is of convenient size, *and never enclosed loose in the letter.* Whenever possible larvæ (i. e. grubs, caterpillars, maggots, etc.) should be packed alive, in some tight tin box—the tighter the better, as air holes are not needed—along with a supply of their appropriate food, sufficient to last them on their journey; otherwise they generally die on the road and shrivel up to nothing. Along with the specimens send as full an account as possible of the habits of the insect, respecting which you desire information; for example: what plant or plants it infests; whether it destroys the leaves, the buds, the twigs, or the stem; how long it has been known to you; what amount of damages it has done, etc. Such particulars are often not only of high scientific interest, but of great practical importance.

Change in the Bureau of Agriculture.

The *Country* makes the statement that Professor Charles V. Riley is about to take the place of Professor Glover, as Entomologist of the Agricultural Bureau. Professor Riley has done excellant work as State Entomologist of Missouri, and as a member of the United States Entomological Commission. He is also widely known as a writer and discoverer in his special field of science. It would be a pity to have his activities shelved in a dusty nook of a government bureau.

Note on the Distribution of the Marine Shells of Florida.

BY W. W. CALKINS, CHICAGO, ILL.

My article in the February number of the VALLEY NATURALIST, refers to former conditions accompanying the formation of the Coral Reefs of Florida, and speaks of certain peculiarities in regard to marine mollusk fauna, found on the Atlantic coast but wanting on the Gulf side of the state—re-appearing, however, further west. The differences mentioned have surprised every observer and collector who has given the subject any attention. Roemer noticed it. And the late Dr. Wm. Stimpson, in a paper read before the Chicago Academy of Sciences, a part of which was published in the *American Naturalist*, vol. 4, remarks "that of three hundred and fourteen species of shells collected by him in the Florida waters, one hundred and forty-five are common to both coasts, while fifty-eight are peculiar to the east, and one hundred and eleven to the west coast." I think Dr. Stimpson's paper containing the full list, was burned up in the Great Fire of 1871.

Entomological Draftsman.

We have recently received from Professor Franklin C. Hill. Curator and Lecturer on Paleontology, in the Geological Museum College of New Jersey, beautiful enlarged photographs of *Harpalus caliginosus*, lower and dorsal views, and the abdomenal or lower views of *Lucanus cervus*, Linn., with each part distinctly drawn and described. The professor expects to have the dorsal view of *Lucanus cervus* done sometime next summer. Much credit is due the professor for the pains he has taken in getting the drawings so true. Every entomologist ought to have one of each.

PERSONS receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription. With your aid, we hope soon to be able to enlarge the NATURALIST to double its present size.

A LADY of Michigan has been very successful in obtaining two flowers instead of one from every flowering sheath of the calla lilly. Her method is as follows: as soon as the joint flower is cut, or begins to wither, pull the stalk down through the open sheath clear to the bottom, at the bottom will be found standing close to the stalk, another bud, enclosed in a delicate covering. Cut the old stalk away as close as possible without injuring the bud, and if it has not been kept back too long, it will grow up very quickly.

FAME.

BY PHILLIPS THOMPSON.

"What is fame?" I asked a youth.
"'Tis the poet's inspiration;
'Tis the patriot's just reward;
Whets the edge of warrior's sword.
Welcome danger, toil, privation,
So I might but write thy name
High upon the roll of fame."
"What is fame?" I asked a sage;
And he smiled with pregnant meaning;
"'Tis a bubble—'tis a breath—
Phantom fire that lights to death!
Aftermath of tardiest yield,
Garnered on life's harvest-field,
Stripped of all that's worth the gleaning."
"What is fame?" I asked a man
Worldly-wise; thus his advising:
"Worship not yet scorn not fame,
'Tis the echoing of your name;
But a breath—yet fills your sails;
Fire to boil your pot avails.
Fame is—gratis advertising!"

—[Boston Traveler.

Entomology.

The Lepidoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

[*Aegeriadæ*, *Zygacnidæ*, *Sphingidæ* and *Bombycidæ*.]

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 2.)

Abbreviations: v. c. very common; c. common; n. c. not common: r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Aegeria cucurbitæ, Harr. r.
Alypia 8-maculata, Fabr. r.
Amphion nessus, Cram. v. r.
Chœrocampa tersa, Linn. n. c.
Ctenucha venosa, Walk. v. c.
Cydosia aurivitta, G. & R. r.
" *nobilitella*, Cram. v. r.
Darapsa myron, Cram. n. c.
Deilephila lineata, Fabr. c.
Dolba hylacus, Drury. r.
Erinnyis ello, Huebn. r.
" *merianæ*, Grote. v. r.
Euscirrhopterus Gloveri, G. & R. r.
Lycomorpha pholus, Drury. n. c.
Macrosila carolina, Linn. c.
" *cingulata*, Fabr. r.
" 5-*maculata*, Steph. c.
" *rustica*, Cram. r.
Pachylia ficus, Merian. r,
Philampelus Linnei, G. & R. r.
" *pandorus*, Huebn. r.
Psychomorpha epimenis, Drury. c.
Scepsis fulvicollis, Huebn. n. c.
Smerinthus juglandis, Smith. v. r.
" *modesta*, Harr. v. r.
Sphinx plebcia, Fabr. r.
Actias luna, Linn. r.
Anisota Heiligbrodti, Garvey. v. r.
" *senatoria*, Sm. Abb. n. c.
Arctias dione, Fabr. n. c.
" *figurata*, Drury, r.
" *phyllira*, Drury. r.
" *virgo*, Linn. n. c.
Callimorpha clymene, Esp. v. c.
Cisthene subjecta, Walk. c.
Citheronia regalis, Huebn. v. r.
Clisiocampa decipiens, Walk. n. c.
" *sylvatica*, Harr. n. c.
Crocota ferruginosa, Walk. c.
Datana aurora, Sm. Abb. v. r.
Deiopeia aurea, Fitch. r.
" *bella*, Drury. c.
" *ornatrix*, Drury. r.
Eacles imperialis, Drury. r.
Ecpantheria scribonia, Stoll. r.
Heterocampa subrotata, Harvey. v. r.
Hyperchiria io, Fabr. r.
Lagoa crispata, Pack. r.
Leucarctia acrea, Drury. n. c.
Platysamia cecropia, Linn. r,
Telea polyphemus, Linn. r.
Xyleutes robiniæ, Peck. r,

OMITTED IN LIST OF RHOPALOCERA:

Pamphila Meskei, Edw. v. r.

Not a new Species.

BY PROF. C. H. FERNALD, MAINE STATE COLLEGE, ORONO, ME.

The moth which occurs in the so-called "Jumping bean" of Mexico, and which has been referred to in previous numbers of the VALLEY NATURALIST, is not a new species. It was first described, so far as I know, by Westwood in the Proc. Ashmolean Society, 1857; and also in Trans. Ent. Soc. Lon., 1858, under the name of *Carpocapsa saltitans*. The same insect was described by Lucas in 1858, in the Revue et Magazin de Zoologie, under the name of *Carpocapsa Deshaisiana*, with a plate containing a colored figure of the imago, larva, pupa, the seed from which it was raised, and figures of the mouth parts of the larva.

The suggestion of C. G. Siewers in the February number, that all the *Tortricidæ* may prove to be jumpers, is worthy of consideration, at least so far as the species that feed in seeds is concerned, though I have never yet observed anything of the kind. I am confident that some of the leaf rolling species, at least, are not jumpers, though when disturbed they are very active, and if removed from the leaf and laid in the hand or on a table they will remain quiet, but if disturbed they riggle about very lively, but not in a manner to jump up so as to carry their rolled leaf with them.

Botany.

The Leaf—its Structure and Functions.

BY JOHN COCHRANE, HAVANA, ILLINOIS.

As the time is near at hand that the foliage will clothe the forest and grove, it is appropriate to call to mind its structure and its functions. in autumn when the sun retires to the Southern hemisphere; the chilly winds of autumn remind us of the approach of winter. The leaves by a process of natures unchanging law, assume their tinted hues of maturity and age, but not from frost. The Silver Maple, the Ivy, the Virginia Creaper, the Sumach, the Pear and the Coffee tree are the first ripe. and preparing to leave the spray on which they grew.

"Gay bodies they are, but go down to decay
Ere winter's breath comes, they are wasted away,
But a change will come o'er them, and dream-like and fair,
The features that marked them, they will once again wear."

The Oak, the Elm and the Chestnut on account of the large amount of tannin contained in them will for awhile longer adhere to the parent stem. All plants iu a general sense receive their food from their roots. The tree receives its supply from minerals, such as lime, silex, potash, magnesia, etc. in solution. The sap thus charged with nourishment ascends the trunk, traverses the branches and passes into the leaf.

The superfluous sap which held the nourishment in solution, passes of by respiration through the leaf, but the plant does not part with the nourishment contained in the liquid. This is distributed through the plant, the leaf retaining its preportion in its cells. The wanderful system of minute vessels which traverses its whole cellular tissue becomes clogged as the season advances, till they are wholly suspended, the matured leaf loses its hold and falls to the ground. The remarkable power of the leaf to decompose carbonic acid, enables them in common with the roots, to contribute to the growth of plants. The components of all plants are carbon and the elements of water.

The woody fibre is formed of carbon, hence the growth and increase of all plants and trees depend on their power of taking up and digesting this substance which they receive from the atmosphere combined with oxygen. The leaves seperate the carbon from the oxygen, and appropriate the former to plant growth.

In reality the leaves are the lungs of the plant, and their functions are strikingly analogous to the lungs of animals. The green leaves of a growing plant absorb carbonic acid, and expose it to the action of the suns light, which seperate the oxygen from the carbonic acid, and is given out by the leaves.

The carbon remains and is appropriated by the plant. To perform these functions the leaves must be exposed to the light and be green. Plants grown in the dark are feeble and destitute of substance and of color. These functions are uniform in all the great varieties of vegetation.

"The same wand'rous tissue, the outlines and grace,
Of each tiny leaflet and blossom we trace.?"

Did space permit, we would refer to the various amounts of moisture appropriated by some plants, and the amounts exhaled from the leaves; why dense shady gardens are damp, etc. Endless duration is the age of matter, and of its author, endless space the empire. All God's providences are embodied in His unchanging laws, and the unchanging laws of nature are the unchanging thoughts of God.

Ornithology.

Birds of Michigan.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

B. virginianus. Great Horned Owl. A common resident, and so well known as to need no discription. It nests and rears its young here, and is perhaps the most common of all the owls.

S. asio. Screech Owl. This owl, so common in New York and New England, is rarely seen here, but occasionally specimens are seen. The nest is built in hollow trees, and the eggs are a pure white and nearly spherical.

A. Wilsonianus. Long Eared Owl. This bird is about fifteen inches long, dark colored plumage with long prominent ear tufts. Is found everywhere in the forests and woodlands; it builts its nest in the trees, and lays four pure white eggs.

N. ninea. The Snowy Owl. This species is about the size of the great horned owl, and is well known from its light colored plumage; it breeds in the northern regions, and is an inhabitant of the arctic circle. In Michigan it is a winter visitor and is one of the few species of birds known to inhabit or visit both the Eastern and Western hemisphere. The entire order have been supposed to be injurious to man by preying upon the smaller domestic animals and fowls, and are consequently followed with feelings of revenge, and destroyed without mercy.

It is quite likely that a fair trial would show that this is a mistake, and would disclose the fact that they are the friends of man and beneficial to agriculture.

C. americanus. Yellow-billed Cuckoo. A summer resident, and breeds but is not common. Two or three individuals may be seen in the deep thickets in the course of a summer. Its cry resembles somewhat the syllable "kou" or "krow," and from the fact that it is supposed to utter it most freely immediately preceeding a storm, it has ac-

quired the name in some localities of "rain-crow."

C. Erythrophthalmus. Black-billed Cockoo. A summer resident, but more rare than the yellow-billed, they are easily distinquished by the color of the bill. Althongh these birds belong to the same family, they differ in some respects widely from the cockoo of Europe. The name is derived from the cry or notes—cuckoo, cuckoo—of the European species, which differs entirely from that of our birds. The most marked difference, however, is found in the fact that the American species build their own nests and rear their own young, while the other built no nest and their young are brought up as foundlings.

[*Continued.*]

Conchology.

A Naturalist in Florida—Cruise of the "Rose Bud."

BY W. W. CALKINS, CHICAGO, ILL.

[Paper No. 2.]

The "Rose Bud" measured about nine tons, was flat bottomed with centreboard, drawing two feet light; deck rail eight inches high only; two small masts; good new sails and rigging. She was manned by two sailors who were her owners, and usually employed her in sponging—a vocation followed by a hundred or more Key West vessels of the small class. She was built for shallow or deep water and capable of withstanding severe "blows," as we soon found out. "Just the thing," as Dr. Velie remarked, and Dr. Brown with our orator concurred.

On January 25th we were early aboard with our light baggage and numerous collecting traps, such as guns, rifles, knives, alcohol, barrels, salt, harpoons and lines, etc. I had almost omitted to mention the supplies—thinking of Jules Verne's submarine voyage. These consisted of sea biscuit and rainwater, a little bacon, etc. The aqueous element predominated of course. We could get fresh fish for every meal, and did by simply throwing out a hook or cast net. Dressed in our summer clothing and standing on deck with broad sombreros on our heads, we were ready for business. The lines were cast off; the little schooner caught the breeze and away we went at the rate of six knots an hour—bound for Markesas Keys eighteen miles distant. The day was glorius and in an hour we were six knots from Key West. A favoring breeze wafted us into the midst of fields of floating *Fuci Sargassum*. Instinctively the dredges or dip nets were in hands and brought upon deck rich specimens of the weed, which we knew to be the home of crustaceans found no where else. Several species were obtained and also the shells *Litiopa striata*. Having secured enough, more sail was added and about 1 P. M. we glided over the bar and lay inside the sallow lagoon of Markesas. Four days were spent here in collecting shells, turtles, birds and their eggs, harpooning saw-fish, sharks, etc. Dr. Velie paid particular attention to the latter pastime, while Dr. Brown and myself were otherwise occupied. The Keys are about four miles long, and from a few rods to half a mile wide. They are uninhabited—therefore an excellent place for the hunter and naturalist. Among the attractions on land, is an immense "rookery" of sea fowl. The mangroves everywhere cover the Keys, and the "rookery" occupies the most inaccessible portion where water constantly stands. We walked for many rods on the trees, from one nest to another, while the birds kept up an eternal clatter overhead. We saw plenty of Fish-hawks (*Corvus assifragus*) and secured their eggs.

Weeks might be spent here delightfully. We rambled from one point to another, finding ever something new. Sharks afforded the most sport and excitement; there are several species here, but the most ferocious are the tiger-shark (*Galerocerdo tigrina*); they are from ten to fifteen feet long, and woe to the unwary victim who comes in their path. One day five of us were in the little "dingy" or small boat going from one part of the bay to another when along came one of these gentlemen; quick as thought a sailor threw the harpoon which took effect. the shark made off like lightning—faster than the line could be payed out. He made for land and before we knew it, had jammed our boat against the overhanging mangroves throwing us all pell-mell into the bottom of the boat. Something fell on me which I supposed was the shark, but on regaining my senses found it was the captain. On straightening out which did, on my word, occupy many seconds, we found that our marine friend had bitten off the line and left with the harpoon in his body; He was at least fifteen feet long. This is only one of many elegant little adventures at Markesas. The sting-rays (*Trygon centroura*) and *Myliobatis Freminvillei*; as well as saw-fish, swarm in these waters. We ate our meals on deck—the top of the cabin serving for a table. And at these times the small fish seemed to know there was food for them; a few crumbs would bring hundreds to the surface, while we could hook them out at every throw, but disdaining so slow a process, the cast net was usually resorted to—one haul bringing in generally a dozen or more fish. Dr. Velie secured an ample supply of skins of all kinds. These, packed in salt, were shipped home. Some smaller species were put in alcohol. My next paper will notice other wonders of these tropical lands and seas.

Geology.

Terrestrial Magnetism.

BY PROF. RICHARD OWEN, INDIANA STATE UNIVERSITY, BLOOMINGTON, IND.

Since the brief notice published in your March number, of experiments made, showing the direction and strength of electrical currents in the earth's crust, and from the atmosphere to the earth, the later researches tend to corroborate the statements therein made.

The currents in the earth's crust would seem to result from two sources, the thermal difference between two given points on the same parellel of latitude, one is a thermal east, the other further west, bringing in consequence of the earth's revolution from west to east, the sun's rays to fall sooner in the morning on the eastern than on the western locality and thus causing currents to flow from an easterly to a westerly direction.

These currents diminish in strength as the sun reaches the meridian, at the western locality or place of observation. But the currents from the southerly lands to the more northerly on a given meridian are much more powerful, at least judging by the observations made for Central Indiana. Here the thermal difference apparently between the heated regions of Central America and Mexico, and our colder north lands, produces currents from a southerly direction, having sometimes double the strength of those from the east, at least in the afternoon.

The currents equal distant each side of the magnetic meridian (which is here about 5 degrees east of north) seem to be about equal, if we take the average of the 24 hours. Should this prove to be uniformly the case, it would appear to offer a solution of the problem connected with the variation of the needle; the equal currents each side of the magnetic needle holding it to its position sometimes (as near the centre of continents) holding it to the true geographical north, at other places varying east, again at others West. The slight horary variations in the 24 hours and the changes of the needle, with the change of seasons, as well as the great regular oxcellations of the needle, would then be referable to any modifications in solar power, though sun spots in greater or less proximity of the sun, &c., &c., thus varying the strength of the earth's currents.

Should health permit, I expect to continue these observations, and to test the currents at other localities during vacation; a summery of results will then be furnished for the VALLEY NATURALIST.

Meteorology.

Missouri Weather Service.

We have just received a summery of the observations of the Missouri Weather Service, Prof. F. E. Nipher, Director, made in February last, of which the following is a correct report:

The average temperature at the Central Station, was 40.7, which is about 3 degrees above the normal temperature. The lowest temperature was 19.5 on the 11th. During the month the temperature fell below the freezing point nine times, and below 30 degrees F., three times. The highest temperature of the month was 60.5 on the 21st.

The rainfall was 1.71 inches, which is about 3-4 inches below the average at this place.

In the state, the rainfall was least in the North and greatest in the Missouri Valley, the region of greatest rainfall being bounded by a line drawn near Wright City, Louisiana, Shelbyville, Lexington, Warrensburg, and thence to the East, passing North of Jefferson City. Within this area the rainfall exceeded 3 inches. Southward, the rainfall diminishes at first, increasing rapidly to over 3 inches in the extreme south—Poplar Bluffs and Neosho. The river counties South of St. Louis received less than 2 inches.

The areas of maximum rain, were determined by heavy thunder storms on the 20th and 21st.

The thunder storm of the 19th was very local, occurring between Jefferson City and Big Creek (Wright City), being visible in the N. W. and N. horizon of the central station from 4 to 7 P. M. On the 20th at about 3 A. M. a thunder storm is reported in the S. W. of the state, and at Miami and Glasgow, and by 9 A. M. the storm had visited W., C. and E. Missouri, North of St. Louis, with severe lightning, and rain from 0.75 to 1.25 inches, (as per report of 23 stations). At the Central Station no thunder was heard, and the rain was only 0.01 inch. In the afternoon a second thunder-cloud passed to the N. E. from Lebanon.

On the 21st rains were general and very heavy over same region, but "thunder and lightning" is reported from only two stations. It appears that the electrical displays were most marked on the E. of the barometric depression, and diminishing in intensity toward the centre of low pressure.

On the 24th and during the succeeding night, a narrow belt of snow-storm swept across the state from Kansas City and Pleasant Hill to St. Louis, but not reaching St. Charles nor Ironton. At Kansas City the depth was 2 inches; Pleasant Hill 4; Warrensburg 7½; Sedalia 6½; St. Louis and southward ½ inch.

Annual Report of Meteorology for the City of Oakland California, for the Year 1877.

We have received the meteorological report of Oakland, California, of which we give below a short synopsis. Observations taken at 7 A. M., 2 P. M. and 9 P. M. of each day, by J. B. Trembley, M. D. Latitute, 37 degrees, 48 minute, 20 seconds north; longitude, 120 degrees, 15 minutes, 20 seconds west. Height above the sea 24 feet.

Mean temperature for the year - -	56.29
" " " of warmest day, June 11th - - - - - - - - - -	73.

Mean temperature of coldest day, December 31st,	41.66
Maximum temperature for the year, June 11th, 2 P. M.	96.
Minimum temperature for the year, December 31st, 7 A. M.	30.
Greatest daily variation, June 11th	38.
Least daily variation, January 30th	1.
Greatest monthly range, October	47.
Least monthly range, April	25.
Average daily range for the year	14.61
Average monthly range for the year	35.50
Yearly range of temperature	66.

Queries and Answers.

SHEBOYGAN, WIS., March 7, 1878.

Ed. Valley Naturalist:

To-day the first installment of "bugs" for the season have put in their appearance in immense numbers. I avail myself of your generous offer to name them for me, by sending with this mail a number of them. The loose earth of the garden is everywhere punctured with their holes.

Yours respectfully, DR. J. J. BROWN.

Answer:—The insects you send is *Aphodius inquinatus*, Fabr. (No. 3275, p. 57 Crotch's Check List Coleoptera.) It is very common in this localiy—being found everywhere, under logs, stones and in loose earth.

G. H. Ragsdale, Gainesville, Texas. Your letter of the 18th, with fly enclosed received, the fly was as "flat as a pancake," hence we could not distinquish it, please find directions for sending insects on page 13.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

Among our "exchange" we may note the following:

THE BOTANICAL GAZETTE. We have received the March number of this valuable paper. Among the many interesting articles we notice one—"An Enumeration of Plants from the Semi-tropical Regions of Florida" by Dr. A. W. Chapman. which are either new, or which have not hitherto been recorded as belonging to the flora of the Southern States.

FAMILIAR SCIENCE AND FANCIERS JOURNAL. We have received the March number of this illustrated magazine devoted to the interests of the Naturalist and Fancier. We congratulate the editor—Mr. Jos. M. Wade—upon the good appearance of his March issue.

THE AMERICAN BEE JOURNAL, devoted exclusively to bee culture and the production of pure comb and extracted honey. The oldest bee journal, was established in 1861, by the late Samuel Wagner. Thomas G. Newman & Son, publishers, Chicago Illinois. It is invaluable to the bee-keeper.

GLEANINGS IN BEE CULTURE, devoted to Bees and Honey, published monthly by A. I. Root, Medina, Ohio. We have received the March number of this valuable bee journal, it is as full of news concerning the apiary as ever. Every bee-keeper should have it

THE SCIENCE OBSERVER, a journal for Amateur Scientists, published by the Boston Amateur Scientific Society. It is principally devoted to Astronomy and Meteorology.

THE OOLOGIST. We have received number 10 of volume III of this valuable little sheet. It is devoted to Ornithology and Oology.

We regret to announce the death of the accomplished naturalist, Mr. ANDREW MURRAY, which occurred at Kensington on the 10th of January. Mr. Murray was born at Edinburg on the 19th of February, 1812. He is chiefly known to science for his excellent paper on the "Pediculi infesting the various races of man." And as the monographer of the *Nitidulidæ* and of the *Coniferæ*. In 1869 he published the well-known work on the "Geographical distribution of Mammals." Mr. Murray's last work was on the "*Aptera*," which was published in 1877, under government supervision, and was intended to form one of a series of guide-books to the Kensinger Museum.

The well known horticulturist, Dr. JARED P. KIRTLAND, died at his residence near Cleveland, Ohio, on the 11th of December, 1877. Dr. Kirtland was born at Wallingford, Connecticut on the 10th of November, 1793. His principal scientific publications are reports an the "Geological Survey of Ohio" and "Notes on the Diurnal Lepidoptera of Western Ohio." He is known as the originator of a number of Hybrid Cherries.

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Tortricidæ Wanted.

I am desirous of obtaining as many North American *Tortricidæ* as possible for the purpose of studying this family. I shall be glad to name and return to any who will forward their *Tortricidæ* to me for this purpose, all save such as may prove new and desirable to retain for description. I should be pleased to correspond with any who intend to collect Lepidoptera in any part of North America where but little collecting has hitherto been done. Address,

PROF. C. H. FERNALD,
Orono, Maine.

Birds' Eggs and Skins for Exchange.

I have a large number of Warblers' skins and other skins and eggs to exchange for skins of Owls, Woodpeckers and eggs of Seabirds in sets. Address, Chas W. Gunn, Editor *Naturalist & Fancier*, Grand Rapids, Mich.

WANTED.

The following books are wanted by the publisher, for which he is willing to pay reasonable prices:

THE AMERICAN ENTOMOLOGIST, volume I; 1869.

Prof. Riley's First Entomological Report of Missouri; 1869.

Prof. Riley's Second Entomological Report of Missouri; 1870.

Prof. Riley's Fourth Entomological Report of Missouri; 1872. (Two copies.)

Dr. LeBaron's Fourth Entomological Report of Illinois; 1874.

Bulletin Illinois Museum of Natural History, No. 1; December, 1876.

Walsh's paper on Insects, in first vol. Trans. Ills. Nat. Hist. Soc. *

Walsh's First (and only) Report, as State Entomologist of Illinois. †

Also a full set of Illinois Entomological Reports.

Address, THE VALLEY NATURALIST,
1213 South Sixth Street, St. Louis, Mo.

* This is also contained in fourth volume of the Illinois State Agricultural Report.

† This was published in connection with Trans. Ills. State Horticultural Society; 1867.

FOR SALE.

The publisher has the following books for sale, for which he is willing to accept reasonable prices:

Third Annual Entomological Report of Missouri; 1871.

Fifth Annual Entomological Report of Missouri; 1873.

Sixth Annual Entomological Report of Missouri; 1874. (Two copies.)

Eighth Annual Entomological Report of Missouri; 1876.

Address, THE VALLEY NATURALIST,
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Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., MAY, 1878. NUMBER 5.

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Amateur Scientific Association of Lebanon, Pa.

We are in receipt of the *Daily News* of Lebanon, Pa., containing a marked article of an association organized March 8th, called the "Amateur Scientific Association." Mr. J. A. Seltzer of said city informs us that at the first regular meeting the following officers were elected: President, Frank Lowry; vice-president, John Loehle; secretary and treasurer, John A. Seltzer; who with the addition of J. Shindel Krause, constitute the board of managers.

Since then we have received the following from the secretary:

Editor Valley Naturalist:

A regular meeting of the Association was held Thursday evening, April 4th. President Lowry in the chair. Two propositions for membership were handed in, and candidates unanimously elected.

Secretary reported copies of *Daily News*—containing notice of the forming of the Association, March 8th—sent out, and copies of VALLEY NATURALIST of St. Louis, Mo., received. Motion passed that the Association subscribe for the VALLEY NATURALIST. President deposited in the Association a large number of *Pyritic nodules*, found in a limestone quarry near Lebanon. A number of queries were handed in and answered, after which meeting adjourned.

JOHN A. SELTZER, Sec. and Treas.

At present the members of this association are mostly interested in Geology and Mineralogy. We shall be pleased to receive small articles on mineralogy for publication from some of our readers.

We are sorry to inform the many persons who have send their name and address to be inserted in the *Naturalists' Directory*, that for want of space it was crowded out of this issue, but will positively be inserted in the June issue. Rates are 10 cents per line, see style on last page.

Personal Notes.

Prof. Henry A. Ward of Rochester, N. Y. called at our office on the 22d of April last, he is a gentleman in every respect, and well fitted for the work he has undertaken. On another page we give an engraving of himself and the museum he recently completed.

The students of the Central Wesleyan College at Warrenton, Mo., are making Geological excursions every Friday, ever since warm weather has set in, under the supervision of Prof. Jno. H. Frisk, a gentleman well versed in the several branches of natural history, and worthy of the position he holds.

J. M. Williamson of Carroll County, Ill., is going on a scientific hunt in Missouri, Kentucky, etc., this month, we shall be glad to welcome him to St. Louis, should he pass through our city.

Mr. W. W. Calkins of Chicago, Ill., intends to take another trip to Florida next winter for the purpose of collecting specimens of natural history. We hope he will furnish the VALLEY NATURALIST with full details of the trip and specimens collected.

Mr. Burchard, the well-known taxidermist and naturalist of this city intends to leave this month for Colorado in search of rare birds and natural history specimens generally.

Mr. J. Monell of the Missouri Botanical Gardens, located at this city; a student of Washington University, intends to take a trip to Colorado this summer in company with some of his brother-students. He is well versed in the many branches of Entomology and Botany, making *Aphidæ* his specialty, we hope he will improve his time in securing many rare specimens.

Contributions Received, Etc.

The following is a list of articles, reports, etc. received, which we were unable to publish in this issue, but will publish them in our June issue.

Birds of Milwaukee County, Wis., by Fred C. Grein, Milwaukee, Wis. (Continued.)

A Naturalist in Florida, by W. W. Calkins, Chicago, Ill. (Paper No. 3 continued.)

Birds of Michigan, by W. H. Hughes, Grand Rapids, Mich. (Continued.)

Birds of St. Clair County, Ill., by Wm. L. Jones, Lebanon, Ill. (Continued.)

Meteorological Report of Oakland, Cal., by Dr. J. B. Trembly. For January, February and March.

Meteorological Report of Missouri, by Prof. F. E. Nipher. For March.

Notes on the lower Helderberg Rocks of Port Jervis, N. Y., with description of a new Pteropod, by Dr. S. T. Barrett, Port Jervis, N. Y.

Meteorological Report of Monticello, Jones County, Iowa, by M. M. Moulton, Vol. Sig. Service U. S. A.

Photographs of local birds and animals of Oregon, from C. Roop, Oregon Museum, Portland, Gregon.

Portrait of W. W. Calkins of Chicago, Ill., an engraving of which will appear in our next issue.

The Ligneous Flora of South Western Iowa, by Professor J. E. Todd, Tabor College, Tabor, Fremont County, Iowa.

We are also unable to publish our Queries and Answers this month, which are very large.

Entomology.

The Lepidoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

[*Noctuidæ.*]

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 3.)

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Acontia abdominalis, Gr. r.
" *aprica*, Huebn. v. c.
" *binocula*, Gr. v. r.
" *candefacta*, Huebn. c.
" *cretata*, G. & R. v. r.
" *erastrioides*, Guen. c.
" *lactipennis*, Harv. n. c.
" *patrudis*, Gr. c.
Acronycta clarescens, Guen. r.
Adipsophanes miscellus, Gr. v. r.
Agnomonia anilis, Drury. r.
Agrophila dama, Guen. c.
" *tortricina*, Zell. r.
Agrotis annexa, Treits. c.
" *herilis*, Gr. n. c.
" *incivis*, Guen. n. c.
" *Rileyana*, Morr. n. c.
" *saucia*, Huebn. c.
" *tricosa*, Lintn. r.
Alaria gaurac, Westw. r.
Alctia argillacea, Huebn. v. c.
Anomis erosa, Huebn. r.
Anthoecia jaguarina, Guen. r.
" *Meskeana*, Gr. v. r.
" *Thorcaui*, G. & R. r.
Anticarsia gemmatalis, Huebn. v. r.
Bleptina caradrinalis, Guen. n. c.
Bolina jucunde, Huebn. n. c.
" *nigrescens*, F. & R. c.
Caradrina conoiva, Harv. c.
" *grata*, Huebn. r.
Catocala adoptiva, Gr. r.
" *agrippina*, Streck. r.
" *amasia*, Westw. v. r.
" *androphila*, Guen. v. c.
" *Belfragiana*, Harv. r.
" *coccinata*, Gr. v. r.
" *consors*, Guen. r.
" *epione*, Westw. n. c.
" *fratercula*, G. & R. n. c.
" *illia*, Guen. v. c.
" *lineella*, Gr. v. c.
" *piatrix*, Gr. n. c.
" *ultronia*, Guen. n. c.
" *Walshii*, Edw. n. c.
Chloridea rhexiæ, Westw. v. r.
Chytoryza tecta, Gr. n. c.
Cirrhobolina deducta, Morr. c.
" *incandescens*, Gr. n. c.
Cloantha cridania, Cram. v. r.
Crambodes talidifovmis, Guen. n. c.
Cucullia lactifica, Lintn. v. r.
Drasteria erechtea, Cram. v. c.
Epizeuxis americalis, Guen. c.
Erastria nigritula, Guen. c.
" *quadrifera*, Zell. c.
Erebus odora, Linn. r.

To the Song Sparrow.

BY OLIVER DON DAVIE, COLUMBUS, OHIO.

Thou gay little sparrow, why cease thy sweet song?
Tho' the dark shades of evening come o'er us,
I know it is sweet, tho' its not very long,
Sing on and I'll join in the chorus.

Is thy mate in the thicket, by the side of yon lea?
Is her little heart troubled with care?
Is she tired of the song so pleasing to me,
That breaks on the calm evening air.

I would sing thee a song of the fair I once loved—
But she rests, and I cannot complain—
And my harp lies unstrung since the days I was young,
And I never can tune it again.

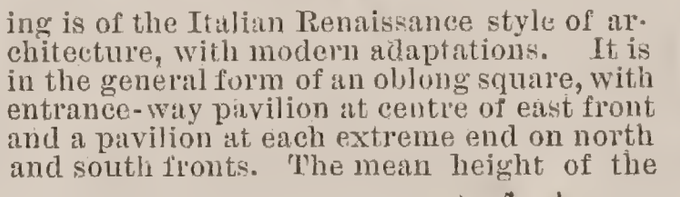
Ah! no, little sparrow; no more the sweet strain,
While my bosom is troubled with care;
While the dark skirted night sweeps over the scene,
While I weep o'er the grave of my fair.

The powers far above must dwell in thy song,
For thine is a heavenly art;
To warble the green leafy woodlands among
And touch the lone wanderer's heart.

—[*Sunday Capital.*

THE LEWIS BROOKS MUSEUM OF NATURAL SCIENCE.

The curriculum of the University of Virginia, at Charlotteville, so full and well-balanced in all other respects, has until last year been somewhat deficent in the department of natural sciences. Now this is changed, and to-day it stands more richly endowed in this respect than any other institution in the South. This great addition to its educational appliances is the gift of a gentleman from the North — Mr. Lewis Brooks of Rochester, N. Y. In the year 1875 Mr. Brooks had presented to Washington and Lee University of Lexington, Va., cabinets of natural science to the value of $10,000, with a further cash gift of $15,000. These donations were made through his friend, Professor Henry A. Ward, who made the cabinets and transferred them and the money-gift with the simple statement that they came from a "Northern friend of Southern education." Again in the Spring of 1876, Mr. Brooks sent Professor Ward to the trustees of the University to offer large cabinets of mineralogy, geology and zöology, of a combined value of $35,000, upon the sole condition that they should supply suitable rooms and cases for storing and displaying the same. A little later, Mr. Brooks sent the trustees in the same secret manner a further sum of $34,000, with which to erect a building to contain the cabinets. With this liberal endowment, the trustees proceeded to put in action the wishes of the donor. They contracted with Professor Ward to make the cabinets—a work for which he was by long experience pre-eminently fitted. They also proceeded to erect the building from plans by Mr. J. R. Thomas, architect, of Rochester. This building is of the Italian Renaissance style of architecture, with modern adaptations. It is in the general form of an oblong square, with entrance-way pavilion at centre of east front and a pavilion at each extreme end on north and south fronts. The mean height of the building is 75 feet, and consists of a high basement, with a 25-foot double story immediately above, and then a 19-foot story with a high attic over all. The basement to top of first story, together with the entrance-way, is constructed of Richmond granite. The walls above are of pressed brick, with heavy trimmings above windows and doors, of cream-colored freestone from Ohio. Each of the principal key-stones which stand prominently carved into the head of some large animal, as lion, bear, walrus, bison, rhinoceros, etc., the whole presenting a graphic appearance and in conformity with the purpose of the building as a museum. On the wide stone belting which extends around the entire building between the two principal stories are cut, in large letters of high relief, the names of renowned scientists in the several fields or studies of nature—Aristotle, Pliny, Linnæus, Cuvier, St. Hilaire, Werner, Humboldt, De Candolle, Audubon, Agassiz, Hall, Owen, Lyell, Dana, Gray, Rogers, Darwin and Huxley. Over the main entrance-way a tablet of the finest marble, bearing the inscription, "Lewis Brooks Hall of Natural Science," has been placed. A handsome flight of massive granite steps at the east end of the building leads up between columns of Scotch granite, with carved capitals, to the outer door, which opens into the spacious vestibule. Here are entrances to the lower hall of mineralogy and geology, and broad stairs ascending to the upper hall of zöology and botany. Below is the high basement, serving for work-rooms of all kinds. The lower hall—twenty-five feet high—is bordered on either side by alcove cases, in which are arranged on neat blocks and with handsome printed labels, specimens of fossils of every class of animals and plants. The smaller specimens are within the cases and protected by glass, while the tops of the cases are covered with large slabs or other bulky specimens. Here is a full procession of life through the ages; starting with the earliest animals of the Silurian, and leading along up in the series and down through time, to the advent of man who, while the most modern of all, has still lent his remains to the series in a cast of the famous fossil man of Guadoloupe.



PROF. HENRY A. WARD, ROCHESTER, N. Y.

THE LEWIS BROOKS MUSEUM AT THE UNIVERSITY OF VIRGINIA, IN CHARLOTTEVILLE, VIR.

Each case is made to represent a distinct geological period. First, there is the presence of the antiquely-fashioned fauna of the Silurian—a world of mollusks, corals and crustacea. All are invertebrate corals and corallines—the fairy architecture of little polyps, crinoids, trilobites and tube-like orthoceratites. A little further on is the Devonian—the old red sandstone of Hugh Miller, alongside of his favorite holoptychius and cephalaspis. It was the period when ganoidal fishes were thrown into the world with amazing prodigality; awkward, finny tribes—buckle-headed, mailed and reptilian, then the highest type of living creatures. Another stride and the dingy Carboniferous era is reached. Here are relics of the rank, flowerless vegetation which flourishes under the warm steam-

ing atmosphere of the coal period. Next is a new world—the realm of strange misproportioned sea-monsters—"creatures whose very type is lost, fantastic and uncouth." On a slab seven feet long are the tracks of the gigantic labyrinthodon—half-crocodile, half-frog; and close by, its head armed with teeth, there are also the relics of an ichthyosaurus—a reptilian whale, mounted on paddles—whose entire length, judging from the head (over five feet long) vertebræ, and paddles, must have been at least thirty feet. In this case, too, are many species of ammonites, with an allied group of pautilus, with their whorled shells, many of them being sawed open and polished, showing the curious septa and siphuncle.

Passing on in the hall the visitor comes to the Cretaceous series—the burial-place of other races, who, in their turn, were lords over our lower world. Here in the wealden are the remains of the massive iguanodon and fragments of those gigantic carnivorous reptiles the megalosaurus and ichthyosaurus and that strangest form of all, the pterodactyle, with the head of a lizard, the wings of a bat, the body of a mammal, five toes and a tail. Here, too, is the famous mososaurus, or lizard of the Moselle. The long procession of strata closes with those of the Tertiary period, represented by remains of the harmless anoplotherium and palaeotherium from the Paris basin, the zenglodon from Alabama, turtles from the Isle of Sheppy, fishes from Monte Bolca. "Pharoah's beans" (nummulites) from the Pyramids, and other smaller foramenifera—the animalcules who created the building-stone of Paris, Cadiz and Havana.

In the central area are standing on broad pedestals, a few colosal forms—the great Siberian mammoth, the elephas ganesa from the strata of the Himmalayas, the glyptodon from Buenos Ayres, the colossochelys or great fossil turtoise of India, and the megatherium or giant fossil sloth from Brazil.

At the further end of the hall a portion of it is so cut off by cases as to make a distinct room, which is devoted to lithology, and in which are rock of all ages and mineral composition, arranged in systematic sequence.

The gallery of the lower hall is devoted to mineralogy. The specimens are arranged here in cases along the walls, and in table-cases bordering the gallery, and comprise spendid ores from the mines of Hungary, Saxony and Cornwall; gold from California, Colorado and Australia; malachite and azurite from Siberia and France; ores of mercury from Austria and South America; silver from Nevada, Norway and Peru; zeolites from Scotland, India, Bohemia and Nova Scotia; meerschaum from Turkey; obsidian from Iceland and Mexico; quartz from all localities, from Montana to Madagascar, etc., etc. The precious stones are handsomely represented by agates, jaspers, berylis onyx, opals and semi-opals, topaz, etc., and by perfect imitations in Bohemian glass of all the noted diamonds in the world. In the cabinet of zoology there are cases containing many thousand stuffed specimens and mounted skeletons of mammals, birds, reptiles, amphibians and fishes. Also protozoa, sponges, gorgonias, corals, star fishes, sea-eggs, mollusks, crustaceans and other invertebrate animals. In the middle of the hall stand the large forms, as elephant, giraffe, camel, zebra, elk, moose, bison, walrus and others.

Professor Henry A. Ward, who was chosen for this work, has long stood at the head of his profession as a collector of objects of natural history and as a maker of museums. He has made similar large collections, costing many thousand dollars each, for Lafayette College, Princeton College, Vassar Female College, Alleghany College, Cornell University, Syracuse University, Rochester Universlty, Vanderbilt University, Indiana State University, and in all, for more than two score of universities and colleges throughout the United States. His time is wholly given to this occupation, which he carries on through an extensive corps of assistants at home, and by collectors whom he sends for his material to all parts of the world. His natural science establishment at Rochester, N. Y., is drawn from extensively by all the museums of science in the land. Those who are capable of judging, declare that it outranks in the range and extent of its transactions anything of its kind in the entire world. He is still a young man and seems destined to continue for many future years, his special work of presenting nature and natural specimens to students and teachers in an educational and truly scientific manner.—[*Frank Leslies Newspaper.*

Conchology.

A Naturalist in Florida—Cruise of the "Rose Bud."

BY W. W. CALKINS, CHICAGO, ILL.

[Paper No. 3.]

Still at Markesas living on the finest fish ever seen. Mullet (*Mugil lineatus*) became too common; such species as the red Snapper, Black Grouper, Catfish, Cavalli, Barb, etc., accorded better with our ideas of the proper thing to have, therefore one of the boys who was an excellent harpooner, frequently added to the stock in the larder.

Our amusements were continued with unabated vigor. The time from sun rise to sun down was fully occupied; at the close of each day's labor we assembled at our rude table on deck to partake of the delicacies provided by Bill the cook, and which were appropriate to the time and place. The adventures of the day were then discussed, specimens of fish. crustaceans, shells, etc., were examined and packed away. We had had a number of scientific books on board and I kept an accurate diary of events.

Some of our captures gave us trouble; for instance—we had collected a barrel of the horse-foot crab (*Limulus Polyphemus*). We tried to kill them for the sake of science, but copious doses of alcohol and hot water only seemed to agree with them. Too much time was required to effect our purpose, so we gave up and left them in the barrel; they soon crawled out and slipped off into the water. As there were thousands to be had in the shallow lagoon, we could easily replace those lost. The resemblance between the young of this species and the ancient Trilobite found fossil in the Silurian rocks is remarkable, and has been carefully studied by Rev. S. D. Lockwood who has probably found out more about the Limulus than any other author. At the time of our visit we were so fortunate as to witness the manner of reproduction. The Limulus inhabits moderately deep water but comes ashore with the tides at this season (later in N. Eng.) to deposit the eggs, which is done within reach of the ebb and flow. The male which is much smaller than his mate, always accompanies her, riding upon her back. She makes with her claws and shield a slight depression in the sand and deposits the eggs to the number of thousands; the male then impregnates the mass. The pair having completed the operation, retreat with the tide. This species burrows in the mud and is carnivorous. The action of wind and wave soon covers the eggs thus left to their fate. Millions are of course destroyed or eaten, but if one thousandth part survive the species will never become extinct.

We were accustomed to go on shore every day, and wander around among the mangroves; hanging to the limbs were seen thousands of the univalve mollusk (*Littorina angulifera*), a very pretty shell an inch or more long. They delight in the vicinity of the sea, and are semi-marine—not living exclusively in the water.

[*Continued.*]

Read the Supplement and sent in your Subscription.

Geology.

Constructive Agents.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

Of all the agents which at the present time are furnishing material for the formation of rocks, perhaps the most remarkable and interesting is the small and fragile animal known as the coral animalcule. A large number of the islands in the Atlantic, Pacific and Indian oceans are composed entirely of the stony remains of these minute animals, straits and channels have been rendered exceedingly dangerous, and even impassable by these accumulations. All of our lakes, streams and springs contains more or less lime, and this is being constantly carried to the ocean by the waters, when the minute particles are gathered up by the small animals for the construction of their stony coverings. The cells of the coral, therefore, are not built up by the polyps, as many suppose, but are the remains of a multitudinous number of coral animalcules. The appearance of the living corals is described as most beautiful, it is said that Ehrenberg was so struck with the sight in the Red Sea, that he exclaimed with enthusiasm: "where is the paradise of flowers that can rival in beauty these living wanders of the ocean?"

Nearly all of our lime stones are formed from the relics of animals, crinoids, mollusks, polyps, etc., hase aided greatly in this work.

At Richmond Indiana, the limestone is almost entirely made up of shells in different states of preservation; the most common being *Rhynchonella capax*, *Orthis biforata*, *Cyclonema bilix*, *Petraia corniculum* and *Orthis dentata*; in one slab about two feet in length and from ten to twelve inches in width, over one hundred specimens were exposed to view.

ADVERTISEMENTS.

WANT, SALE AND EXCHANCE COLUMN.

This column is established for the benefit of those who may wish to buy, sell or exchange insects, plants, bird-skins, books, reports, etc. The price for insertions under this head is ten cents per line, from seven to nine words to the line, for each insertion.

Tortricidæ Wanted.

I am desirous of obtaining as many North American *Tortricidæ* as possible for the purpose of studying this family. I shall be glad to name and return to any who will forward their *Tortricidæ* to me for this purpose, all save such as may prove new and desirable to retain for description. I should be pleased to correspond with any who intend to collect Lepidoptera in any part of North America where but little collecting has hitherto been done. Address,

PROF. C. H. FERNALD,
Orono, Maine.

Birds' Eggs and Skins for Exchange.

I have a large number of Warblers' skins and other skins and eggs to exchange for skins of Owls, Woodpeckers and eggs of Seabirds in sets. Address, Chas W. Gunn, Editor *Naturalist & Fancier*, Grand Rapids, Mich.

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OF THE

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THE VALLEY NATURALIST is a monthly paper, devoted to the interests of the Naturalists of the Mississippi Valley and the West. Its object is to aid the diffusion of natural science in a popular form and to furnish a medium of recording the observations of our Western Naturalists.

We are aware that there are many scientific papers in the East, in which a Naturalist can publish the results of his observations, but there is *none* in which he can place the many minor notes that every working Naturalist daily makes, and which, for this reason, however interesting they may be, often remain forever buried in the note-book of the observer.

Instead, then, of wishing to set up as a rival to our Eastern brethren, we wish to be considered rather as aiding and supplementing their good work. Naturalists we hope will aid us both by subscribing and contributing articles for publication.

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THE VALLEY NATURALIST is the best and cheapest naturalists' advertising medium in the Mississippi Valley and the West; nor is it excelled by any Eastern publication, as its subscribers are scattered East, West, South and North; even reaching many naturalists in Canada. Therefore affording the best medium for advertisers, who, we hope will patronize it liberally.

We have established a WANT, SALE AND EXCHANGE COLUMN, for the benefit of those who may wish to buy, sell or exchange insects, plants, bird-skins, eggs, books, reports, etc. The price for insertions under this head is ten cents per line, from seven to nine words to the line, for each insertions.

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THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., JUNE, 1878. NUMBER 6.

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Entomology.

A New Species of Lachnus.

BY J. MONELL, MISSOURI BOTANICAL GARDENS, ST. LOUIS, MO.

Considerable attention was attracted on Wednesday last (May 15) by immense numbers of Aphides flying throughout the city. They were particularly abundant on Fourth Street and also in the north-western part of the city. Though migrations of the smaller forms are by no means uncommon, I do not think that they have been before noticed among these larger, and, as they are often termed, lower forms of *Aphididæ*.

Immense swarms of the common *Aphis brassicæ* are very often observed; many instances are recorded by Kirby and Spence, and I have myself noticed it in 1871, filling the air in such quantities at St. Louis as to inconvenience persons on the street by flying into there eyes. According to Morren, migratory swarms of *Aphis persicæ* appeared here and there successively throughout Belgium in 1835 and were so thick as to obscure the light of the sun.

Lachnus longistigma, n. sp.

General color dusky; abdomen cinereous, with four rows of black dots.

Apex of the stigma extending to the stigmal vein.

Third joint of the antennæ as long as the two following taken together, sixth joint about half as long as penultimate.

Length of body 0.17-.20 in.—to tip of wings 0.33-.35 in.

The antennæ, body and legs are very hairy. Head and thorax black. Abdomen ash-gray, but appearing dusky on being devested of the pruinose matter; dorsal surface with four rows of black spots, which on close inspection with a lense appear to be slightly elevated above the surface. Wings somewhat fumose; the "insertions" red. The veins are as usual in this genus, the first two discoidals being very much more robust than the cubitus. Stigma black, linear, extending along the apical margin of the wing to the apex of the stigmal vein, which is short and quite straight. The stigma is often slightly yellowish towards the tip and in normal specimens seems to extend just to the apex of the fourth vein, but frequently they are about .005 in. apart; and in one abnormal specimen the stigma extended nearly .01 beyond the stigmal vein. In some specimens the intercostal cell is not perceptable, the costal and subcostal veins appearing as if connate, while in others the exterior basal angle of the stigma is not situated so far back as the base of the cubitus. The distance between the apex of the upper furcal and that of the stigmal vein is equal to about one-third of the distance between the tips of the furcals.

No other Aphide known to me has the apical portion of the stigma prolonged to such an extend as in this species. In *Pemphigus longistigma* (China) of my mss. the stigma is prolonged nearly to the apex of the fourth vein, but the apical portion is very slender, often scarcely perceptible and never reaches the fourth vein.

Since the above was written, I have found this *Lachnus* living in great abundance on the under side of branches of Linden, a few miles west of St. Louis. The apterous specimens do not differ in coloration from the winged ones. The newly born larvæ have the head, thorax and legs yellowish and the abdomen greenish.

The rostrum seems to increase in length very little or perhaps not at all after birth as it is of the same length in the newly born larvæ as in adult individuals; in the larvæ it extends beyond the tip of the abdomen for a distance equal to nearly one-third of the length of the body, while in winged specimens it reaches but little beyond the third pair of coxæ.

Botany.

The Ligneous Flora of South Western Iowa.

BY PROFESSOR J. E. TODD, TABOR COLLEGE, TABOR, FREMONT COUNTY, IOWA.

Abbreviations: c. common; r. rare; v. very; l. lowland; h. highland; p. prairie; b. border of timber; f. forest.

Acer dasycarpum, Ehrh. Soft Maple. v. c. l.
Amelanchier canadensis, T. & Gr. var. *oblongifolia*, Service. r.
Amorpha canescens, Nutt. Lead-plant. v. c. h. p.
Amorpha fruticosa, L. False Indigo. c. l. b.
Ampelopsis quinquefolia, Michx. Five-leaf Ivy. v. c.
Asimina triloba, Dunal. Paw-paw. r.
Carya alba, Nutt. Shag-bark, r. h. f.
" *glabra*, Nutt. Pignut. c. h.
" *amara*, Nutt. Bitternut, v. c. h.
Ceanothus Americanus, L. Red-root. c. h. p.
Celtis occidentalis, var. *crassifolia*, L. Hackberry, v. c. h. f.
Celastrus scandens, L. Bittersweet. c.
Cercis canadensis, L. Red-bud. c. h. f.
Cephalanthus occidentalis, L. Buttonbush. r. l.
Cornus paniculata, L'Her. Arrowwood. v. c.
" *stolonifera*, Michx. Red-Osier Dogwood. c. l.
Corylus Americana, Walt. Hazel-bush. v. c. h. b.
Cratægus tomentosa, var. *mollis*, L. Thornapple. c. h.
Diervilla trifida, Mœnch. Bush Honeysuckle. r.
Euonymus atropurpureus, Jacq. Wahoo. c. h.
Fraxinus Americanus, L. White Ash. v. c.
" *viridis*, (?) Michx. Green Ash. v. r. l.
Gleditschia triacanthus, L. Honey Locust. c.
Gymnocladus Canadensis, Lam. Coffee bean. c.
Juglans nigra, L. Black Walnut. v. c. h. f.
Menispermum Canadense, L. Moonseed. v. c. f.
Morus rubra, L. Mulberry. c.
Negundo aceroides, Mœnch. Box Elder. v. c. b.
Ostrya Virginica, Willd. Ironwood. v. c.
Prunus Americana, Marshall. Red Plum. v. c.
Prunus Virginiana, L. Choke Cherry. v. c.
Prunus serotina, Ehrh. Black Cherry. v. c. h. b.
Platanus occidentalis, L. Sycamore. v. c. l.
Populus monilifera, Ait. Cottonwood. v. c. l.
Pyrus coronaria, var. *Ioensis*, Wood. Crab Apple. v. c. h. b.
Quercus castanea, Willd. Chestnut Oak. c. h.
Quercus coccinea, var. *tinctoria*, Gray, Black Oak. v. r. h.
Quercus Macrocarpa, Michx. Burr Oak. v. c. h.
Quercus rubra, L. Red Oak. c. h.
Rhamnus lanceolatus, Pur. Western Buckthorn. c. h. b.
Rhus glabra, L. Sumach. v. c. h. b.
" *toxicodendron*, L. Poison Oak. c.
" " var. *radicans*, Torr. Poison Ivy. v. c.
Ribes rotundifolium, Michx. Smooth Gooseberry. v. c.
Ribes floridum, L. Black Currant. l.
Rosa lucida, Ehrhrdt. Praire Rose. v. c. h. p.
Rubus occidentalis, L. Black Raspberry. v. c. h.
Rubus villosus, Ait. Common Blackberry. v. r. h.
Salix tristis, Ait. Bearberry Willow. c. on high bluffs.
Salix humilis, Marshall. Prairie Willow. c.
Salix longifolia, Muhl. Long-leaved Willow. v. c.
Salix lucida, Muhl. Shining Willow. v. c. l.
Salix nigra, Marshall. Black Willow. l.
Sambucus Canadensis, L. Common Elder. v. c.
Spirea salicifolia, (?) L. Meadow-sweet. v. c.
Symphoricarpus vulgaris, Michx. Indian Current. v. c.
Staphylea trifolia, L. Bladder-nut. r. l.
Tilia Americana, L. Basswood. v. c. h. f.
Ulmus fulva, Michx. Red Elm. v. c. h. b.
" *Americana*, L. White Elm. v. c.
" *racemosa*, Thomas. Hickory Elm. c. h. b.
Viburnum lentago, L. Black Haw. r.
Vitis cordifolia, Michx. Frost Grape. c.
Zanthoxylum Americana, Mill. Prickly Ash. c.

The region varies in altitude from about 1000 to 1300 feet above the sea. The prevailing soil is that of the *Loess*.

THE ST. LOUIS ACADEMY OF SCIENCE have now in press, a quarto volume on the Pottery of the Mound Builders. It is beautifully illustrated with lithographic plates and will prove a work in every way worthy of our Academy. The text we beleive, will be the joint production of the Archæological Section. The Academy hopes to have the work, ready for distribution by the middle of June.

Meteorology.

Missouri Weather Service—April, '78.

PROF. F. E. NIPHER, DIRECTOR, ST. LOUIS.

Central Station.—The mean temperature of the month was 61° 23′ the normal temperature being 56°. The highest temperature was 81° on the 17th. In April of 1836, '70 and '71, Engelmann observed a temperature (April) of 93°. The lowest temperature of the past month was 41° 5′ on the 1st. In 1857 an April temperature of 18° was observed.

The rainfall was 6.31 inches, the normal rainfall for April being 3.70 inches. Rainy days—nine. The highest April rainfall observed by Engelmann was 7.68 in 1850. Three Aprils out of 42 have had a greater rainfall than the one just past. Nearly all of the rain fell between the 15th and 25th, 3.52 inches falling in five hours on the night of 22-23d, while for 70 minutes, the rain fell at the rate of 2 inches per hour. No frosts have been observed.

In the State—the rainfall was over 6 inches, in the region to the S. W. of St. Louis, this region being also remarkable for the scarcity of its weather stations. Here occurred the heaviest rain, during the storm of 22-23d, none falling on these days in the northern part of the State, where crops have suffered somewhat from lack of rain; the monthly fall having been from one to two inches.

On the 23d at 3:30 A. M. (St. Louis time, at which time the rain ceased at St. Louis) a destructive storm passed through the swamps near Sikeston, going eastward to Charleston, beyond which it has not been traced in this State. It was accompanied by flashes of lightning, but with little thunder, which may have been obscured by the noise of the tempest. The storm lasted about an hour with a rainfall of 0.90 inches at Sikeston. The path of the storm was about 25 miles wide, and judging from the position of fallen trees, the storm had a whirling motion. Immense trees were blown up by the roots, others being broken off. The roar of the tempest mingling with the crash of falling timber, is described as having been terrific in the extreme. No lives are reported lost, but buildings were unroofed, and stock killed. Great damage was done around Charleston.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of April, 1878. Observations taken at 7 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 120° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer for the month	29.88
Highest barometer, April 27, 9 P. M.	30.19
Lowest " " 15, 7 A. M.	29.52
Monthly range	.67

THERMOMETER.

Mean temperature for the month	55.30
Mean temp. of warmest day, April 7	62.
" " of coldest day, April 13	45.33
Maximum temp. April 7, 2 P. M.	73.
Minimum " " 15, 7 A. M.	40.
Greatest daily variation April 8.	21.
Least " " " 14	6.
Monthly range of temperature	.33
Mean daily range of temperature	12.63

WIND—90 OBSERVATIONS.

Southwest and west	38
Northwest and north	12
Northeast and east	3
Southeast and south	5
Calm	32

The prevailing wind was westerly and at the close of the month the trade wind made its appearance in the beautiful weather, delicious air and steel blue sky. Flowers and vegetation, although somewhat backward for the season, came forward with a rapid development and luxuriousness. Agricultural interests scarcely ever within the history of the State appeared more promising of an abundant harvest than at the present time. The rainfall of the season or agricultural year has nearly compensated the deficiency of that of 1876 and 1877. Whether there is a compensating law controlling the rainfall at longer or shorter periods, can not be ascertained from the data at present known, but everything so far seems to indicate that the great meteorological law of weather compensation is not an exception in California.

Review of the Meteorology of Monticello, Jones County, Iowa.

BY M. M. MOULTON, VOL. SIG. SER. U. S. A.

This branch of science seems to attract more attention than any other. There are stations springing up everywhere. To the farmers information about storms and more particularly about rain is of great importance; and information as to severe expected frosts, might save farmers, horticulturists, florists, nursery-men and persons engaged in raising garden products, a whole year's labor from destruction.

Latitude of Monticello is 42.13; Longitude 91.15; Elevation above sea level 800 feet; Magnetic variation 8.5 degrees east. Observations were taken daily at 7 A. M. and 2 and 9 P. M.

Maximum Temperature for the year 1877	93.
Minimum Temperature for the year 1877	.20
Mean Temperature for the year 1877	47.06
Rainfall in inches for the year 1877	47.97
Number of rainy days for the year 1877.	67
Snow in inches for the year 1877	58.22

A Queer Breakfast.

Editor Valley Naturalist:

Having just finished a hearty breakfast of delicious "toad stools," and feeling just now quite generous, I send you by mail herewith a few of the same that grow so abundantly here-about. Please in return send me the botanical name.

I believe the Fungi of the U. S. are not yet worked up and published in a seperate work. Consequently very little of this interesting branch of botany is generally known, and many a delicious and most nutricious "toad stool" is kicked over as a "nasty poisonous thing." I propose to give them all "a gastronomical test" as they come along during the season—avoiding of course the few that give unwholesome signs.

A description of the edible and non-edible mushrooms or toad stools of the Western States would very much interest our people. In No. 4 of the VALLEY NATURALIST, in giving directions for sending insects, you tell us to send them "in a little pasteboard box," we do not always have one "of convenient size" and shape as well as strength to stand the usage it gets in the mail bags, many a nice specimen has been ruined or lost on its way, in the mail, on account of the unfitness of this "little pasteboard box." Disappointment was often my lot, until I hit on the style of a box, such as I send you now containing the Fungi—and I am sure it will reach you in good order. This kind of a pasteboard box can be made by any one in a few moments, and of any desired shape or size—the material being always at hand—as any useless pasteboard box will do. It is of course a very simple thing to call your attention to, but sometimes the most simple things are the most useful ones, and very often they are the *last* ones thought of.

Yours truly,

Badger.

SHEBOYGAN, WIS., May 11, '78.

July issue—8 pages, 24 columns.

Conchology.

A Naturalist in Florida—Cruise of the "Rose Bud."

BY W. W. CALKINS, CHICAGO, ILL.

[Paper No. 3 concluded.]

Of the same habits were several smaller species living in damp places here and elsewhere. Among them were *Melampus coffea* and *M. bidentatus* and *Tralia cingulata*. In a marsh overflowed by the sea we obtained the fine shell *Cassidula corona*, and a small salt water terrapin. I saw no land shells at Markesas, but was much astonished at first to observe wherever we went, hundreds of dead shells, such as *Natica Pyrula*, etc., walking over the sand, making a tremendous clattering as they jostled and tumbled over each other in mad attemps to escape. These shells were occupied by "Hermit Crabs"—peculiar crustaceans, with a body so alternated and soft that they are obliged to protect it constantly by wearing this novel apparel, which they slip into when born and change occasionally for a better shell, or as their growing necessities compel them to seek a larger house. They get into this by backing in the pliable slender body which follows the volutions of the shell. Having secured themselves firmly, nothing remains outside but the anterior portion—the claws being the largest part and extending well forward. On being alarmed they will either run away or remain quiet and entirely close the aperture of the shell with their claws. This species is known as *Eupagurus pollicars*, Stm. A smaller species (*E. longicarpus*, Stm.) occurs abundantly in shallow waters and occupies the little univalve shells such as *Nassa*, *Columbella*, etc. A third large species found by Dr. Stimpson and ourselves, also exits in Florida. But whether described I do not know. Quite as interesting as the "Hermits" are the "Soldier" crabs—*Gelasimus mina* and *G. pugna*. They abound everywhere on the sea shore, living in holes dug in the sand, from which they sally forth in search of food. The slightest alarm will send them tumbling, fighting and scrambling to the nearest hole. If this chances to be already occupied, the intruder is quickly expelled. There are many other species which I cannot mention now.

We had spent several days at Markesas. The weather had been continuously delightful, and our collections large. It was our intention to sail directly for Tortugas after looking over the Markesas, but several harpoons having been lost in sharks, it was decided to return to Key West for a new supply, also ship home the specimens procured, and then sail directly to Tortugas. We left with regret, but time was precious, and so one afternoon we sailed away from this rich field, and that night about ten o'clock anchored the "Rose Bud" under the walls of the Fort at Key West.

The Orograph.

At a meeting of the French Academy of Sciences, held December 10th, M. Schrader exhibited his orograph and a geographical map of Mont Perdu made with it. The instrument consists of a circular paper-covered plate with central vertical axis carrying a sleeve which can turn round freely. On the top of the sleeve is a telescope, the movements of whose frame in the vertical direction are communicated to a pencil, and transformed by gearing into to and fro movements. If the telescope describes a circle round the horizon, the style describes a corresponding circle on the plate; if the telescope goes up or down, the trace produced is further from or nearer to the central axis. A spirit level being fixed to the telescope, the circle made when it is even, gives a means of estimating the height and depressions.—[*Scientific American.*

Ornithology.

Birds of Milwaukee County, Wis.

BY FRED. C. GREEN, MILWAUKEE, WIS.

Order—*Passeres.*
Family—*Turdidæ.*
Genus—*Turdus.*

T. migratorius. Robin. Very common here, although not gregarious, I have seen flocks of these birds passing through the woods this spring. I shot a specimen on the 28 of February (1878). While out collecting last summer I found a nest of this bird on the ground.

Genus—*Minus.*

M. carolinensis. Cat Bird. Common summer resident here. I have not seen any yet this spring.

Genus—*Hyporhynchus.*

H. rufus. Brown Thrush. This bird with the cat bird and robin, are, I think, our most common summer birds, being very sociable and nesting within the city limits.

Family—*Saricolidæ.*
Genus—*Sialia.*

S. Sialis. Blue Bird. A beautiful little bird, very common here. I shot three specimens on the 15 of March; they are seen in greater numbers on a dreary day, whistling their plaintive notes.

Family—*Fringillidæ.*
Genus—*Melospiza.*

M. palustris. Swamp Sparrow. While out collecting March 15, I shot three specimens of this bird, and saw many flocks of them, flying through the woods, which were on the edge of a swamp. They are very shy, and when running along the ground look like gophers, especially when they enter some log or stump. They are found on lowlands or marshes.

M. melodia. Song Sparrow. Found near bushes or clumps of saplings; common.

Genus—*Spizella.*

S. monticola. Tree Sparrow. This bird may be found here in great numbers, but I have not paid much attention to it until this spring, and so do not know. I shot a specimen on the 29 of March.

S. socialis. Chipping Sparrow, or "chippy," as it is called here. This is the only one of our native birds that is not afraid of a person passing. It is almost fearless enough to stand on ones finger.

Genus—*Passer.*

P. domesticus. House Sparrow. Imported from Europe. This bird is rapidly extending over the city. About five years ago a gentleman by the name of Preusser brought from Europe a few of these birds, and let them loose. They began to breed and now every building in the city is the home of one if not many more pairs.

Genus—*Passerella.*

P. iliaca. Fox Sparrow. This bird is very rarely seen here. I shot a specimen on the 29 of March.

[*Continued.*]

Birds of St. Clair County, Ills.

BY WM. L. JONES, LEBANON, ILL.

[Paper No. 4.]

Order—*Insessores.*
Family—*Trochilidæ.*
Genus—*Trochilus.*

Trochilus colobris. Ruby-throated Humming Bird. A common summer visitor; rarely arrives in this locality before May 15.

Family—*Cypselidæ.*
Genus—*Chætora.*

Chætora pelasgia. Chimney Swallow. An abundant summer resident. They depart southward soon after the first frosts in the early autumn.

Family—*Caprimolgidæ.*
Genus—*Antrostomus.*

Antrostomus vosiferus, Whip-poor-will. A rare bird. The whip-poor-will is occasionally seen in summer in the damp woods or thickets. Have discovered their eggs, (which they lay on the bare ground or on a few leaves) here as early as May 15.

Genus—*Chordeiles.*

Chordeiles popetue. Night Hawk. A common summer resident; seen here most abundant in latter part of spring or in early fall, just before they commence their migrations.

Family—*Alcedinidæ.*
Genus—*Ceryle.*

Ceryle alcyon. Belted King-fisher. Common during summer months in vicinity of creeks and lakes. Remains until the streams are frozen.

Family—*Colopteridæ.*
Genus—*Tyrannus.*

Tyrannus carolinensis. King Bird, Bee Martin. Common summer resident; arrives here usually in April. Does not depart southward in fall as early as many of our migratory birds.

Genus—*Myiarchus.*

Myiarchus crinitus. Great Crested Fly-catcher. A very common summer sojourn. Found most common in upland woods.

Genus—*Sayornis.*

Sayornis fuscus. Pewee, Phoche. Common summer resident. Arrives in March, rarely in February. Very frequently constructs its nest in some convenient place about dwelling houses.

Genus—*Contopus.*

Contopus vireus. Wood Pewee. A common summer visitor. The Wood Pewee noticed most common in the dark recesses of the woods in bottom-land.

[*Continued.*]

Answers to Correspondents.

[We will be pleased to name specimens which may be sent by correspondents. In all cases the specimens should be numbered and the exact locality and date of capture should be given. When possible, it is desirable to receive at least two specimens of each species. Should our correspondence become too voluminous, we will return the names by mail, so as to avoid filling up too much space with a dry list of names. As a great deal of time is required to name specimens carefully, we will hereafter take no notice of imperfectly preserved specimens or of specimens of which the locality is not given.]

Jos. Grindon, St. Louis, Mo.; the insects you sent are as follows:

No. 1 is *Calopteron typicum*, No. 4422, Crotch's Check List Coleoptera, p. 74. No. 2 is *Lixus concavos*, No. 7004 same list, p. 119; belongs to the genus *Curculionidæ*, they are both very rare.

C. R. Gunther, Worcester, Mass. The insects you sent are as follows:

No. 1—Apple-tree moth, male and female; *Anisupterix varnata.*

No. 2—Found under the bark of Hemlock tree, it is a very rare insect, belongs to the genus *Hypophlœus*, page 107 Crotch's Check List of Coleoptera.

No. 3—Found under the bark of Hickory tree, is *Catogenus rufus*, p. 44 same list.

No. 4—Found under the bark of Hickory tree is *Plochionus timidus*, p. 10 same list.

No. 6—Belongs to the genus *Cryptobium.*

No. 8—Is *Blechrus linearis*, No. 382, p. 11 same list.

No. 9—Belongs to the genus *Chelcites.*

No. 10—Is *Platidema excavatum*, No. 6312 p. 107 same list.

No. 11—Belongs to the genus *Elater.* This genus has not yet been studied up, hence we can not name it.

No. 12—Is *Dermestris bi-color* (?) p. 41 same list.

No. 13—Belongs to the genus *Agrilus*, p. 65 same list.

Dr. J. J, Brown, Sheboygan, Wis.:

The Fungi which you sent were putrified when we received them. They are doubtless some species of *Coprinus*, a genus which may be easily known by having the lamellæ or gills soon dissolving into an inky fluid. Many of the species are very ephemeral, and last but a few days. Specimen can only be preserved with great difficulty.

A. Young, Kingston Furnace, Mo. The plants you sent are as follows:

1—*Heuchera Americana.* 2—*Euphorbia?* imperfect specimen. 3—*Trillium sessile.* 4—Do not know it, wound like further specimens. 5—*Uvularia grandiflora.* 6—*Polygonatum grandiflorum.* 7—*Ranunculus repens*, incomplete specimen.

As some of the specimens are in a somewhat imperfect condition, it is impossible to determine them, but will do so if you can send us more complete specimens.

The water insect is a Hemiptera (Heteroptera), it is *Belostoma grandis.* We should be pleased to receive a few specimens of this insect.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

PROCEEDINGS DAVENPORT ACADEMY OF NATURAL SCIENCES. Volume II, Part I.

The second volume of the *Proceedings* is now published in parts, (Part I now ready) and will contain many valuable papers on Archæology, Botany, Conchology, Entomology, Geology, etc., for which illustrations will be freely provided whenever needed. The volume is to contain not less than 300 pages, with illustrations, and it is hoped will be completed early this year. Subscription for the Volume, in advance, $3.00. For sale by the VALLEY NATURALISTS' AGENCY, No. 1213 South Sixth Street, St. Louis, Mo.

THE FLOWERING OF AGAVE SHAWII. By DR. GEORGE ENGELMANN. (Transactions of the St. Louis Academy of Sciences.)

This paper is the result of a series of observations made by Dr. Engelmann, on a plant which flowered at the Missouri Botanical Gardens. From daily measurements of the flower-stalk it appears that the growth was uniformly greatest during the night. The full developement of the style and the separation and partial spreading of its lobes take place only after the stamens have faded.

THE LAND AND FRESH WATER SHELLS OF LASALLE COUNTY, ILLINOIS. By W. W. CALKINS, Chicago, Ill. (Proceedings of the Ottawa Academy of Natural Sciences.)

In this pamphlet of 48 pages, the author describes all the species known to inhabit La Salle County. Also beautiful engravings of *Helix albolabris, H. clausa, H. multilineata, H. profunda, H. alternata, H. pennsylvanica, H. solitaria, Try. Lewisii, Hy. lineata,* (enlarged) and *Succinæ oblique.*

THE NEW GUIDE TO ROSE CULTURE, published by the DINGEE & CONARD CO., Rose Growers, West Grove, Chester County, Penn.

Our thanks are due Messrs. Dingee & Conard for their kindness in sending us the new and revised guide for 1878. It contains much valuable information for the practical florist, treating not only of all the varieties of roses, but also of hardy ornamental flowering shrubs, climbing vines, Japan lilies, etc., etc.

THE ST. LOUIS PHILATELIST, an 8-page illustrated paper, devoted to the interests of the stamp collectors. Each issue contains a list of recently issued postage stamps illustrated with numerous accurate wood

engravings, as well as a list of the latest revenue stamps, and much other valuable matter. A specimen copy can be secured by addressing the editor—E. F. Gambs, 621 S. Fifth Street, St. Louis, Mo.

THE NEW ROCKY MOUNTAIN TOURIST, just from the press, is indeed an artistic gem. Handsomely illustrated with our most sublime Western mountain scenery, it is a fit companion to *Picturesque America* in any gentleman's library. Specimen copy may be had without cost by writing to W. F. White, Topeka, Kansas.

We notice that Mr. Reinhardt has decided to devote a column or more of his paper—the *Temperance Vedette*, published at Terrell, Texas—to natural history. And judging from the run of articles appearing in the last two or three issues, he gives Ornithology the preference, the articles mainly treating of birds of Northern Texas.

LE NATURALISTE CANADIEN, M. L'Abbe Provancher, Editor, Cap Rouge, Canada. We have received the "Mai" number of vol. 10 of this magazine; it is printed entirely in French, and contains in the present number articles on Botany, Entomology and Mineralogy.

BULLETIN OF THE BROOKLIN ENTOMOLOGICAL SOCIETY. This is a new publication, and deserves some credit, it contains a good many engravings of new beetles, larvæ, etc. discovered by some of the members of the Society.

FOURTH ANNUAL REPORT OF THE COMMISSIONER OF AGRICULTURE, of the State of Georgia. For the year 1878. We have received the above report from the Commissioner, Thomas P. Jaynes, Atlanta Ga.

THE OOLOGIST, a monthly journal devoted to the study of birds and their eggs. With the March issue it dons a cover, greatly improving its appearance. It is published at Utica, N. Y.

THE BOTANICAL GAZETTE, published at Logansport, Ind., has enlarged and also dons a cover, which of course improves the appearance of all 8vo. publications.

THE NATURALISTS' LEISURE HOURS AND MONTHLY BULLETIN, published by A. E. Foote, Philadelphia, Pa. It is principally devoted to Geology and mineralogy.

THE WESTERN OOLOGIST, devoted to the study of birds, their nests and eggs. We have received number 2 of vol. 1 of this amateur paper; it is published at Milwaukee, Wis.

Notes.

DR. HAMBACH will start West on a collecting expedition about June 15th.

We are always glad to receive notes of recent discoveries in any branch of science.

IT IS rumored that an effort will be made next year, to introduce botany as a regular study in the Washington University.

AT the great day of judgment never let it be brought up against you that you didn't subscribe for this paper. It will be a damaging charge.

MR. SAUNDERS has recently discovered that the larvæ of *clisiscampa* mature early in the fall and hybernate in the egg, waiting for the warmth of spring before eating their way out.

CALIFORNIA will send five hundred tons of ores to the Paris Exposition, to astonish the old world with the vastness and variety of her mineral resources. How many tons does Missouri propose to send?

PERSONS receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription.

PROF. R. S. MCCULLOCH, who occupied a chair at Princeton before the war, and subsequently at Washington and Lee, has accepted the professorship of Chemistry and Natural History at Louisville State University, Baton Rouge.

ALBINO OPOSSUM.—Just as we go to press, we received a photograph of a beautiful Albino Opossum from M. Tandy, Dallas City, Ills. It was taken in the vicinity of Ednia, Knox County, Mo. We published a notice of its capture in the January number of the VALLEY NATURALIST.

We are called upon to record the death, after a brief illness, of a bright young naturist—Mr. E. L. HUDNUT, of Orange, N. J. He was well known to collectors of birds' eggs, and was deeply interested in his collection, which had attained a size equaled by few with his experience in this country. —[*The Oologist.*

PROFESSOR J. H. KERR, of the Colorado College, at Colorado Springs, has discovered some fossils of unusual size, in the locality known as the "Garden of the Gods," at the foot of Pikes Peak. The length of one of the animals, whose remains have been found is estimated at 117 feet. The formation is cretaceous, the bones are easily broken and the animal figures are in part represented by casts.

ADVERTISEMENTS.

NATURALISTS' DIRECTORY.

[Under this heading we shall publish the Name, Address and branch of Natural History, at the rate of ten cents per line, single insertion. Discount on long-time advertisements.]

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DAVIE, OLIVER, Columbus, Ohio. *Ornithology.*

FERNALD, PROF. C. H., Orono, Me. *Gen. Nat. His., Entomology.*

HEILIGBRODT, L., Bastrop, Texas. *Entomology, Reptiles.*

JONES, WM. L., Lebanon, St. Clair County, Ill. *Ornithology.*

OWEN, RICHARD, Prof. Ind. State University, Bloomington, Ind. *Geology.*

MONELL, J., Mo. Botanical Gardens, Saint Louis, Mo. *Botany, Entomology.*

METEOROLOGISTS.

NIPHER, PROF. F. E., Washington University, St. Louis, Mo.

TREMBLY, J. B., M. D., Oakland, Cal.

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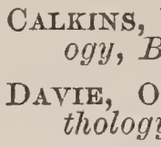
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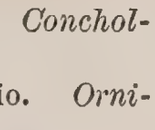

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This column is established for the benefit of those who may wish to buy, sell or exchange insects, plants, bird-skins, books, reports, etc. The price for insertions under this head is ten cents per line, from seven to nine words to the line, for each insertion.

Tortricidæ Wanted.

I am desirous of obtaining as many North American *Tortricidæ* as possible for the purpose of studying this family. I shall be glad to name and return to any who will forward their *Tortricidæ* to me for this purpose, all save such as may prove new and desirable to retain for description. I should be pleased to correspond with any who intend to collect Lepidoptera in any part of North America where but little collecting has hitherto been done. Address,

PROF. C. H. FERNALD,
Orono, Maine.

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THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., JULY, 1878. NUMBER 7.

The Skylark.

BY PERCY BYSSHE SHELLEY.

Hail to the, blyth spirit!
Bird thou never wereth,
That from heaven, or near it
Pourest thy full heart
In profuse strains of unpremeditated art.
Higher and still higher
From the earth thou springest,
Like a cloud of fire;
The blue deep thou wingest,
And singing still dost soar, and soaring
Teach us, spirit or bird, [ever singing.
What sweet thoughts are thine;
I have never heard
Praise of love or wine
That painted forth a flood of rapture so devine. —[*Western Oologist.*

Our Engraving.

With the present issue we present a portrait of Mr. W. W. Calkins, of Chicago, Ills. He was born in LaSalle County, (Ills.) May 29th, 1842. Spent nearly twenty years on a farm, while a boy, going to school winters, attending a seminary for a few terms; of this seminary R. Williams, one of the ablest educators in that state, was principal; he attributes whatever success he has had to the earnest efforts of Mr. Williams, in demanding thoroughness in study; here he picked up some knowledge of Greek and Latin, subsequently improved by future private study, so that when eighteen he could read Greek and Latin with fluency. The war came and he enlisted as a volunteer, served three years; but as the war has nothing to do with his career as a naturalist, we will pass over it. After the war he went into the lumber business and has been in it ever since. He was one of the founders of the Ottawa (Ills.) Academy of Sciences, he was its Secretary and President when he removed to Chicago in 1870.

He always had a natural taste for the sciences from his boy-hood, at thirteen he had a fine cabinet of the rocks and fossils of LaSalle county, though he knew but little about them then.

His publications are as follows: In 1859, in the *Ottawa Free Trader*, seven articles on "Geology of LaSalle County." During the war he was a regular correspondent of the *Ottawa Republican*. Since the war he has probably published one hundred articles of a scientific character in various papers and magazines. The most valuable are a series in the *Cincinnati Quarterly Journal of Science*, the *American Naturalist*, the VALLEY NATURALIST and two scientific papers in the Proceedings of the Davenport Academy of Science; one of these will enumerate 304 species of Florida marine shells, with notes and descriptions of new species, illustrated. His contributions, at different times, include Geology, Conchology, Botany, etc. His private cabinet of conchology is the most extensive in the West, not even excepting Academies of science. He is, of course, becoming pretty well known as a Conchologist, this study being his specialty.

He has made two scientific trips to Florida, and will make another this summer, where we hope success will attend him in his numerous researches for new scientific facts.

WILLIAM WIRT CALKINS, CHICAGO, ILLINOIS.

Albinos.

Since the notice appearing in the January number of the VALLEY NATURALIST, of the capture of an Albino Opossum in the vicinity of Ednia, Mo., we have received numerous notes from all parts of the country of the capture of Albino Opossums. But now we receive notices of the capture of Albino Squirrels, Robins, and—what next?

ALBINO SQUIRREL.

Prof. John H. Frick, Professor of Natural History in the Central Wesleyan College, at Warrenton, Mo., informs us through a letter of recent date, that one of his students has found an Albino Squirrel near Drake, in Gasconade County, Mo.

ALBINO ROBIN.

Ed. Valley Naturalist:

I saw in your columns an article on the White Opossum. I think you would like to hear about a White Robin that frequents our orchards. Description: Throat, back and wings very light drab, bill yellow, breast very light drab mingled with salmon color, abdomen white, head black, tail the same as back but tipped with black and white. Common size of the *Merula Migraloria.*

Yours respectfully, DAVID B. PENNIMAN.
WOODBURN, ILLS., June 25, '78.

Editorial Chit-Chat.

Professor Richard Owen, Professor of Natural History in the Indiana State University, Bloomington, Ind., intends to visit our city in August or September, if health permits, and he could hear of a suitable undisturbed locality where he could bring a lot of scrap metal and operate with lightning rods and his own rods, which he carries with him. In another column will be found an interesting article on terrestrial magnetism, he devoting all his spare time to making observations in this particular branch of Science. Any person of this city knowing of a suitable undisturbed place where he could make observations, would confer a favor by notifying him of same.

"The American Association for the advancement of science." The annual meeting of the above mentioned Society will take place at St. Louis, on Wednesday, August 19th. The annual meeting of the "Entomological Club" will take place on the day preceding the meeting of the association, Prof. J. K. Rees, of the Washington University, St. Louis, has been elected Secretary of the local committe of the reception.

Oologists do not fail to read the advertisement of Prof. Henry A. Ward, on another page, he offers for sale rare and valuable eggs from all parts of the world. It will pay you to deal with him.

It is rumered that the Washington University will soon undertake the publication of a series of monographs after the style of the "Smithsonian Miscellaneous Collection."

We respectfully call the attention of all interested in mineralogy, to the advertisement of Prof. A. E. Foote, appearing on another page. Also those wishing to secure valuable scientific and medical books.

Persons receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription.

Unless otherwise informed, subscriptions received after this day will begin with the July issue. Back numbers can always be had at the regular price.

For want of space the following articles were crowded out: "A Naturalist in Florida" and "Terrestrial Magnetism."

Entomology.

A Great Entomological Collection.

Henry Edwards is about to leave the Coast. He possesses what is probably the largest collection of entomological specimens ever made by one individual, and so admirably arranged is it that Prof. Agassiz, when in this city, expressed a desire to purchase it for the museum at Cambridge. Classified, there are about 60,000 species in Mr. Edwards' cabinets, representing more than 200-000 specimens. In coin, the collection has cost its possessor about $12,000; in labor, he has expended over it all his spare time for a period of twenty-five years. He will part with it to some public institution for the amount he has paid out in actual money. To effect a purchase on these conditions, Prof. Davidson has suggested a subscription of $1,500 each by eight public-spirited citizens, the majority of subscribers to designate the institution to which the collection should be sent. Four citizens have already pledged half the sum required. It is now suggested that the remaining $6,000 might be secured by a pledge of $100 each from sixty citizens, or from thirty persons who would pledge $200 each.—[*San Francisco Call.*

We are always pleased to receive articles and notes of natural science for publication from our friends.

The Lepidoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

[*Noctuidæ.*]

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 4.)

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Catocala formula, G. & R. r.
Cosmia erina, Guen. n. c.
Galgula hepara, Guen. c.
" *subpartita*, Guen. c.
Gortyna nebris, Guen. r.
" *nitela*, Guen. r.
Hadena arna, Gr. r.
" *chalcedonia*, Huebn. n. c.
" *miselioides*, Guen. v. r.
Helioshilus paradoxus, Gr, r.
Heliothis armiger, Huebn. c.
" *phlogophagus*, G. & R. r.
Herminia morbidalis, Guen. n. c.
Homohadena kappa, Gr. r.
Homoptera atritincta, Harvey. v. r.
" *educa*, Drury. c.
" *edusina*, Harvey. v. r.
" *lunata*, Drury. c.
" *mima*, Harvey. c.
Homopyralis tactus, Gr. c.
Hypena scabra, Fabr. v. c.
Leucania extranea, Guen. c.
" *Harveyi*, Gr. r.
Mamestra innexa, Morr. n. c.
" *laudabilis*, Guen. n. c.
Matigramma læna, Harvey. n. c.
" *pulverilinea*, Gr. n. c.
Metoponia obtusa, H. S. v. r.
Pangrapta decoralis, Huebn. c.
Panopoda carneicosta, Guen. r.
Panula inconstans, Guen. n. c.
Perigea fabrefacta, Harvey. c.
Placodes cinereola, Guen. c.
Plagiomimicus pityochromus, Gr. v. r.
Platysenta atriciliata, Gr. n. c.
Plusia biloba, Steph. n. c.
" *brassicæ*, Riley. n. c.
" *fratella*, Gr. c.
" *ou*, Guen. c.
" *predationis*, Guen. c.
" *simplex*, Guen. c.
Plusiodonta compressipalpis, Guen. r.
Prodenia commelinæ, Abb. n. c.
" *flavimedia*, Harvey. v. c.
Pseudanthrœcia coracias, Guen v. r.
Remigia hexastylus, Harvey. r.
" *latipes*, Guen. n. c.
Schinia rectifascia, Gr. v. r.
" *trifascia*, Gr. r.
Selenis monotropa, Gr. c.
Spragusia guttata, Gr. c.
Stictoptera divaricata, Gr. v. c.
Syneda ingeniculata, Morr. r.
Tamila tertia, Gr. c.
Telesilla navia, Harvey. r.
Thalpochares mundula, Zell. c.
Trama arrosa, Harvey. c.
Tricopis chrysellus, Gr. c.
Xanthoptera nigrafimbria, Guen. r.
" *semiflava*, Guen. r,
Zale horrida, Huebn. r.
Zanclognatha cruralis, Guen. n. c.

We will always be pleased to name specimens which may be sent by our friends.

Botany.

Flora of Warren County, Missouri.

BY PROF. J. H. FRICK, CENTRAL WESLEYAN COLLEGE, WARRENTON, MO.

Abbreviations:—c. common; r. rare; v. very; a. abundant; g. gardens.

Ranunculaceæ.

Anemone thalictroides, L. Rice Anemone, c.
Adonis autumnalis, L. Pheasant's eye, g.
Aquilegia Canaderisis, L. Columbine, g.
" *cœrulea*, Torr. " Pike's Peak, Colo.*
Aconitulur nastutum, Fisch, Colorado.
Delphinium auzureum, Mx. Larkspur, c.
Ranunculus abortivus, L. Crowfoot, c.
" *fascicularis*, Muhl. Early crowfoot, c.

Anonaceæ.

Asimina triloba, Dunal. Pawpaw, c.

Berberidaceæ.

Podophyllum peltatum, L. May Apple, v. c.

Papaveraceæ.

Papuver somniferum, L. Opium Poppy, g.
Sanguinaria Canadensis, L. Blood-root, a.
Argemone Mexicana, L. Prickly Poppy, Col.

Fumariaceæ.

Dicentra cucullaria, D.C. White Ear-drop, r.
" *spectabilis*, Bleeding Heart, g.

Cruciferæ.

Arabis Canadensis, L. (?) Sickle-pod, r.
Cardamine laciniata, Bitter Cress, r.
Capsella Bursa-pastoris, Mænch, v. c.
Sinapis arvensis, L. Field Mustard, c.
Lepidum Virginicum, L. Tong-grass. v. c.

Violaceæ.

Viola rotundifolia, Mx, Yellow Violet, r.
" *pedata*, L. var. *bicolor*, c.
" *cululata*, Ait. c.
" *pubescens*, Ait. Yellow Violet, r.
" *striata*, Ait. White Violet, r.
" *adorata*, L. Sweet or Eng. Violet, g.
" *tricolor*, Pansey, Heartsease, g.

Caryophyllaceæ.

Cerastium nutans, Raf. Mouse-ear Chickweed, c.
Cerastium viscosum, L. r.
Dianthus barbatus, Sweet William, g.
Lychnis Githago, Lam, (*Agrostemma*) Corn Cockle, c.
Lychnis chalcedonica, L. Scarlet Lychnis, g.

(*Continued.*)

* A few of the specimens contained in this list were collected last summer (1878) in Colorado.

Remember the address of the Valley Naturalist is Room 36, N. W. cor. Third and Pine Streets, St. Louis, Mo.

Ornithology.

Birds of St. Clair County, Ills.

BY WM. L. JONES, LEBANON, ILL.

[Paper No. 5.]

Family—*Colopteridæ.*
Genus—*Empidonax.*

E. minimus. Least Flycatcher. This diminutive flycatcher is only common here during the spring and fall migrations. Is then seen in company with the numerous species of warblers, from which it is hardly distinguishable. Breeds here I think.

E. acadicus. Small Green-crested Fly-catcher, Rare; occasionally seen in spring.

E. flaviventris. Yellow-bellied Fly-catcher. Common Summer resident. Breeds.

Sub-order—*Oscines.*
Family—*Turdidæ.*
Genus—*Turdus.*

T. mustelinus. Wood Thrush. This melodious songster is quite common in this locality during summer; arrives about April 15. Noticed most frequently in low, damp woods. Breeds, nesting in low, heavy-leaved shrubs.

T. fuscescene. Wilson's Thrush. An uncommon species. Occasionally seen during latter part of spring.

T. Swainsonii. Olive-backed Thrush. Very common during the migratory season. Probably breeds, though I have not seen an authenticated nest from this vicinity. This thrush is but rarely seen in summer months.

T. migratorius. Robin. A very common resident, not rarely seen throughout the whole winter. This robin is gregarius here during the seasons of migration. Large bands of these birds arrive here from winter quarters during the latter part of February and throughout the month of March. They construct nests in April, and by May 15 the majority of the young have been hatched. Their fall migrations are continued until late in November.

Genus—*Sialia.*

S. Sialis. Blue Bird. Another very common resident. Quite frequently seen during winter months. Their first arrival in early spring is indicated by the appearance of a small band flying high, warbling their pleasant notes. In a short time they are seen everywhere endeavoring to find a suitable place to construct nests. They usually raise two or three broods during a season.

Genus—*Regulus.*

R. calendula. Ruby-crowned Wren. Common summer resident. Arrives in April. Departs southward early in autumn. Breeds here.

R. satrapa. Golden-crested Wren. A summer resident, rather rare. Frequently seen in spring months with Warblers.

[*Continued.*]

The subscription of the Valley Naturalist is only $1.00.

Advertise in the only Western Naturalists paper—it has the widest circulation.

Birds of Milwaukee County, Wis.

BY FRED. C. GREEN, MILWAUKEE, WIS.

Order—*Picariæ*

Family—*Picidæ.*

Genus—*Picus.*

P. pubescens. Downy Woodpecker. This bird was first seen on or about the 17th of March. They frequent the woody highlands, and do not seem to be as plentiful as the other species.

Genus—*Sphyrapicus*

S. varius. Yellow-bellied Woodpecker. Appeared on the 6th of April. Not common.

Genus—*Melanerpes.*

M. erythrocephalus. Red-headed Woodpecker. Was first seen about the last of May; early Monday morning, June 10th, and for three or four subsequent mornings, I noticed great numbers of this bird clinging to the side of some chimney, ornaments to lightning rods or anything made of metal, and every few minutes they would strike it with their beak, the strokes following each other in rapid succession, the ring of which could be heard for blocks around. I wish some one would—through the columns of the VALLEY NATURALIST—give a reason for this curious habit.

Genus—*Colaptes.*

C. auratus. Golden-winged Woodpecker, or as it is here called "High-holder." Is a very abundant and well-known bird, being killed in great numbers for food. Last year they were first seen on the 18th of April.

Order—*Passeres.*

Family—*Corvidæ.*

Genus—*Cyanurus.*

C. cristatus. Blue Jay. This is a very common bird, its loud screams can always be heard in the woods. A nest containing four eggs, was found Sunday, April 9th. The nest was build about 15 feet from the ground and from its outside appearance, resembles that of a Brown Thrush.

Genus—*Corvus.*

C. Americanus. Crow. Sometimes seen in the fields here, but is not very common.

[*Continued.*]

Give the Valley Naturalist a trial—it will pay you to advertise in its columns.

FAME.

BY PHILLIPS THOMPSON.

"What is fame?" I asked a youth.
"'Tis the poet's inspiration;
'Tis the patriot's just reward;
Whets the edge of warrior's sword.
Welcome danger, toil, privation,
So I might but write thy name
High upon the roll of fame."
"What is fame?" I asked a sage;
And he smiled with pregnant meaning;
"'Tis a bubble—'tis a breath—
Phantom fire that lights to death!
Aftermath of tardiest yield,
Garnered on life's harvest-field,
Stripped of all that's worth the gleaning."
"What is fame?" I asked a man
Worldly-wise; thus his advising:
"Worship not yet scorn not fame,
'Tis the echoing of your name;
But a breath—yet fills your sails;
Fire to boil your pot avails.
Fame is—gratis advertising!"

—[Boston Traveler.

ADVERTISEMENTS.

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Where more than one stamp is described in a line, the price is so much for *each one*, and not for all contained in the *entire* line. A 3c. stamp must accompany all orders under $1.00. Always send a supplementary order of 50 per cent. Thus, if you send 50 cents, order 75 cents worth, and you will be sure to receive just what you want. State name and address plainly. If you cannot send fractional currency, send unused 1, 2 and 3 cent postage stamps. Those marked (*) are unused; the balance used.

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* " " " 12 kr	5
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" 1867, 10, 20, 30 c	1
* " 1870, 1 c	1
*Bergedorf ½, 1, 1½, 3 sch	3
* " 4sch	5
Bermuda, 1d. red	3
Bolivia, 1867, 5c	10
" 1871, 5, 10 c	8
" 1871, (fig. Justice) 5, 10 c	10
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British Guiana, 1, 2 cent	3
" " 4, 6 c	5
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" 1868, 1, 2, 3, 6 c	2
" " 12 1-2, 15 c	4
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Chili, 1852, 5, 10 c	5
" 1867, 1, 2, 10, 20 c	5
" " 5 c	3
* " 1877, 1, 2 c	5
" " 5, 10 c	5
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" 1857, 4 c	2
" 1860, 4 c	2
" 1862, 4 c	2
" 1870, 50 m	1
" " 12 c	4
" 1872, 10 c	1
" 1873, 10 c	1
* " 1875, 2 c	2
" 1876, 5, 10 c	1
" " 25 c	2
* " Don Carlos, 1 real brown	7
* " Amadeus, 10 c. black	5
Straits Settlements, 1868, 2, 4, 6, 8, 12, 24, 30	3
*Suriname, 2½, 3 c	5
Sweden, 1872, 3, 5, 6, 12, 20, 24, 30, 50	2
" 1874, official 12, 24 sk	2
" " unpaid letter, 1, 3, 5, 6, 12, 20, 24, 30, 50 ore, 1 krona	3
Switzerland, Rayon, 5, 10, 15 c	4
" 1854, 15, 40 c, 1 frc	4
" 1854, 5, 15, 20, 40c	2
" 1862-73, 3, 15, 40 c	3
" " 2, 5, 10, 20, 25 c	1
" " 50 c	2
" " 2 c. chocolate	3
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To Correspondents.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

The *Western Agriculturist*, Quincy, Ill., comes to us this month with a handsomely engraved new title page, which with the other improvements added this year, makes it the Champion Journal for improvements and progress, being the oldest and best established monthly in the West, well edited and handsomely illustrated, it is a desirable journal for every Western farmer.

Answers to Correspondents.

[We will be pleased to name specimens which may be sent by correspondents. In all cases the specimens should be numbered and the exact locality and date of capture should be given. When possible, it is desirable to receive at least two specimens of each species. Should our correspondence become too voluminous, we will return the names by mail, so as to avoid filling up too much space with a dry list of names. As a great deal of time is required to name specimens carefully, we will hereafter take no notice of imperfectly preserved specimens or of specimens of which the locality is not given.]

A. Hubbard, South Bend, Ind.:

The mites on *Passalus cornutus* which you send is an undescribed species of *Gamasidæ*, closely allayed to *Uropoda americana*.

DIED.

SKAER—MRS. CATHERINE SKAER, aged 51 years; died Thursday, June 27th, at 12:30 P. M. Funeral took place from our residence, No. 1213 South Sixth Street, Friday, June 28th, at 9 A. M.

HENRY SKEAR,
FREDERICK SKEAR,
CHARLES J. SKEAR.

We are sorry to record the death of our affectionate mother, who died after having suffered terribly for two weeks, at the end of which time death releived her from all her earthly cares. Leaving us, orphans, alone in this wicked world; but we thank our Saviour that he did not call her from us before we were old enough to take care of ourselves. She rests in peace, God only knows how we will die, perhaps on the battle field, at least we hope we will die in honor, good faith and for the good of our beloved country.

THE LAST SCENE,

Here she lieth, white and chill;
Put your hand upon her brow;
Her sad heart is very still,
And she does not know you now.

Ah, the grave's a quiet bed;
She will sleep a pleasant sleep,
And the tears that you may shed
Will not wake her—therefore weep.

We have received a photograph of the local birds and animals of Oregon, from C. Roop, taxidermist, Portland, Oregon. The following is a complete list and will show how they are arranged: The top is *Glaucidium gnoma*, Pigmy Owl; the left, *Picicarvus columbianus*, Clark's Crow; the third lower in the middle, *Tardus nævius*, Varied Thrush; the two left, *Oreortyx pictus*, Plumed Partridge; the next in the centre of bottom, *Haplodon rufus*; to the botton and left, *Spermaphilus bershey*, Oregon burrying squirrel.

In Europe various species of Heaths cover large tracts of country; many of them are of rare beauty. But in Africa the most varied assortment of Heaths of the genus *Erica* are found.

The Valley Naturalist is the only paper containing articles of every branch of every branch of Natural Science.

Directions for Sending Insects.

All letters desiring information respecting noxious and other insects, should be accompanied by specimens, the more in number the better. Such specimens should always be packed along with cotton, wool, or some such substance, in a little pasteboard box that is of convenient size, *and never enclosed loose in the letter.* Whenever possible larvæ (i. e. grubs, caterpillars, maggots, etc.) should be packed alive, in some tight tin box—the tighter the better, as air holes are not needed—along with a supply of their appropriate food, sufficient to last them on their journey; otherwise they generally die on the road and shrivel up to nothing. Along with the specimens send as full an account as possible of the habits of the insect, respecting which you desire information; for example: what plant or plants it infests; whether it destroys the leaves, the buds, the twigs, or the stem; how long it has been known to you; what amount of damages it has done, etc. Such particulars are often not only of high scientific interest, but of great practical importance.

Our advertising friends should keep in mind that the Valley Naturalist has the widest circulation.

Naturalists who are not already subscribers, should subscribe immediately.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

REPORT UPON FORESTRY, prepared under the directions of the Commissioner of Agriculture in pursuance of an act of Congress approved August 15, 1876, by FRANKLIN B. HOUGH. Washington, 1878.

This work will be welcomed by all persons interested in this important subject. Mr. Hough has evidently taken great pains in the preparation of his report, as everything connected with the subject, from methods of preserving seeds to a discussion of the forest laws has been included. We notice on page 570 a number of valuable notes by Mr. J. Monell. This work is of such an important character that it would deserve an extended review, were it not that any of our readers can obtain it without difficulty by applying to the "Department of Agriculture," Washington, D. C.

Advertise in the Valley Naturalist—the only Naturalists' paper West of the Mississippi.

Agents, this is a splendid chance to add another good paying publication to your list. A liberal per centage allowed.

Ward's Natural Science Establishment in Rochester, N. Y.

[By numerous requests from some of the readers of the VALLEY NATURALIST, for an accurate description of Prof. Ward's Natural Science Museum. We reprint the following from the New York *Evangelist*.]

This unique scientific institution has long been celebrated for the excellence of its work and the variety and extent of its collection. And yet no one visits it for the first time without astonishment, and acknowledging that it altogether surpassed his highest anticipations. A few weeks ago some twenty of the city pastors, by invitation of Professor Ward, visited it in a body and were both surprised and delighted with what their explorations brought to view, and the lucid explanations and statements of the Professor. There was no time for the most hasty glance at the Museum of the University, which he collected and arranged, and which is one of the best in the country. The two large end-rooms in the University building, upon the same floor with the Museum, are filled with all manners of animals, whose home is on the land, or in the water, or in the air, and their skeletons—the property of Mr. Ward; here stored provisionally, and constantly drawn upon to fill orders, and replenished by newly finished specimens.

An hour was very pleasantly and profitably spent in viewing these, and listening to the Professor's comments, which imparted no small amount of curious information, and happily blended the scientific with the anecdotal. Thence we crossed College avenue, and through the main entrance to Mr. Ward's own grounds. We passed under an arch made by the enormous jaw of a right whale of sufficient size to admit a load of hay through it. Here are ten large two-story buildings, besides sheds and yards, devoted to receiving, preparing, and shipping specimens. Scarcely a day passes that does not bring a consignment to the establishment from some part of the world. Two elephants and two tigars, beside other animals, had just arrived from one of his agents and hunters in India. Eighteen men are constantly employed as taxidermists, osteologists, moulders, and mineralogists. Several of these are foreigners, who worked for years under the most eminent anatomists abroad. The work turned out by the establishment is unsurpassed in correctness, durability, and finish by any similar house the world over. Prof. A. Agassiz, Director of the Museum of Zoology at Cambridge, recently said to Prof. A. Guyot of Princeton, that after having tried many foreign preparators, he had found the skeletons mounted by Mr. Ward far superior and trustworthy to any others, and that he had sometimes to send those received from abroad to him, to be properly remounted.

Our stroll through the buildings was almost a constant series of surprises, as it cannot fail to be of peculiar interest to any admirer of nature or lover of the curious. "Cosmos Hall" is a large building, furnished in both stories with drawers and glazed cases which are filled with beautiful crystals, spars, ores and other fine minerals, with rocks in many thousand specimens of uniform size, from localities reaching quite around the world. Here, too, are fossils alike from all lands, and showing all forms, from crawling bug-like Trilobites to the great Dinornis, or fossil bird of New Zealand, with leg-bones larger than are those of an ox. Another building, with a hall thirty by forty feet, and thirty feet from floor to ceiling, is used at present as a general store-room of large objects. Here we saw the skin of the tiger just received from India, from one of Mr. Ward's hunters, which showed where the small rifleball had entered the eye, together with the skins and bones of three elephants also shot by him. In the centre of this building stands the Great Siberian Mammoth, the largest and stateliest of animals of modern times, being sixteen feet high and twenty-six feet in length. This is a copy made in two years of assiduous work by a German artist-naturalist in Stuttgart, Wirtenberg. Mr. Ward saw it there, and to the regret of its citizens generally, purchased, took it to pieces and shipped it across the sea to Rochester.

Three buildings (one of them eighty feet long) are given to the manufacture and display of casts of celebrated fossils, an enterprise originated by Mr. Ward, and which has elicited the highest commendation and encouragement from the scientific world. Fossil animals—the most famous in the history of the science, and of especial interest in their structure, whose remains consist only of some unique specimen stored in one of the Royal Museums of the Old Word, and thus inaccessible to nineteen-twentieths of geological students—are here reproduced in plaster, exact copies, in form and color, of the original. Thus the treasures of the British Museum, the Jardin des Plantes, Vienna, St. Petersburg, Madrid, &c., are reproduced in the cabinets sent out from here to our educational institutions; and American scholars have equal advantages with the most favored of those abroad, to become acquainted with these strange types of extinct life. Mr. Ward spent some years, and many thousands of dollars, in copying these rare and valuable specimens in the museums that contain them. In his efforts he encountered difficulties that would have discouraged most men, and that required no ordinary amount of perseverance and tact to overcome. His collection offers many hundred of these copies of "gorgons, hydras, and chimeras dire."

Here we enter a building devoted to "taxidermy." A number of men are stuffing the skins of monkeys, goats, seals, turtles, beautiful birds, fishes, serpents, &c. Thousands of skins are stored in a room above, awaiting this mounting process. Indeed it is a regular Noah's Ark, with its multitudinous animals of every kind and species, which walk, fly, swim or crawl, from the tropics to the poles. All these skins have been subjected to an arsenic bath, by which they are effectually secured against the ravages of moths and the invasion of vermin.

Now we come to the building devoted to Osteology. In the lower apartments, workmen—French, Belgian, German and English—are busy preparing the individual bones of the different animals, wiring them together, and mounting them on handsome walnut pedestals, as perfect skeletons. The two upper stories of this building are a wonder to behold, with their bags and bundles, and drawers and shelves, of snow white bones, each lot tied up together, to be taken below in its turn, and mounted as a skeleton. These bones have come from an adjacent long shed where they have soaked from six to twenty-four months in tanks and vats of water, and then were bleached on lattice-work trays made for the purpose. In this store-room of bones there was pointed out to us all that remained of Gen. Lee's famous horse "Traveller," which he rode through the war. The bones had been put to soak for a long time in the waters of a spring in Virginia, which proved to be impregnated with iron; so that they were ineffaceably stained, which makes it uncertain whether the skeleton will ever be mounted. The skeleton of the horse Sherman rode on his fierce raid "from Atlanta to the sea," was mounted here for the University of Wisconsin, and is now in their Museum at Madison. Princeton College and Earlham College, Ohio, have each lately sent an elephant skeleton to be mounted here. The Smithsonian Institute at Washington, Agassiz Museum of Comparative Zoology at Cambridge, Yale College, and many other museums, have skeletons here waiting to be prepared. A large lot has lately been shipped to Dr. Murray, the Director of the Government Schools in Japan.

Passing the blacksmith's and carpenter's shops, we go to the Invertebrate house, where, above and below, are glazed cases and drawers filled with beautiful coral and lovely shells, and star fishes, sea-eggs, crustaceans, sponges, gorgonia and other curious forms from the great sea's depths. A final hall contains collections of ethnological and archæological interest—implements and weapons of the "Stone age" of America, France, Ireland, Denmark, etc.; mummies, idols, etc., from Egypt; various objects fished up from the old "lake dwellings" of Lake Geneva; Peruvian and "mound building" pottery; Indian skulls of many races; aboriginal clothing, ornaments, etc., leaving everything more than half unnoticed.

The reader could not possibly form a more erroneous opinion than to regard this establishment as simply a vast curiosity shop—a promiscuous collection of all manner of strange natural objects. On the contrary, it is an invaluable educational institution, conducted exclusively in the interest of science. Prof. Ward has been an enthusiast in this study all his life. He had a special preparation for the work in which he is now engaged, by spending five years as a student in Paris, Germany and London, hearing lectures of the most noted naturalists, and studying assiduously the collections of the most celebrated museums, both royal and private. He supported himself while a student by visiting mines, quarries, and seaside cliffs, and making large collections of minerals, rocks and fossils. In this way he accumulated the extensive Museum of Mineralogy and Geology, now filling ten large rooms—the property of the University

of Rochester. This and his other scientific work has given him an honorable standing among scientists, and he is a member of several of the most famous learned societies in Europe and America. He has travelled through every part of Europe, and extensively in Asia and Africa. Last year he was in Egypt, Arabia, Abyssinia, and to cross the ocean is about a yearly event with him. All this is to replenish and enlarge his stock, which he disposes of to the higher institutions of the land, besides filling numerous orders from the Old World. The collections which he prepares and sends out are araanged to illustrate the prominent points of natural science, and extend to every branch of it.

The minerals are represented by series, showing the peculiarities of composition, of structure, of color, of crystallization, etc. Each mineral has with it a concise statement of its chemical composition, what it occurs with, where it is found, etc. The rocks in the same way, have indicated the minerals of which they are composed, and the strata which they form, in what countries they occur, and what are their uses. In the same manner, the fossils are marked critically as to their nature, what groups of animals or plants they belong to, their place in the geological series, and the exact locality where they occur. This exactness of indication, coupled with great care of choice compilation, gives the educational value, as it has given the scientific reputation, to Mr. Ward's cabinets wherever they have been placed. The same care is given to the zoology, with its stuffed birds and beasts, mounted skeletons, reptiles, and fishes, in alcohol; shells, corals, crabs, insects, birds' eggs, anatomical models, and all the countless specimens here to be found. Mr. Ward has expended no little study upon the construction and appliances for the arrangement of cabinets, and his efforts in this direction have resulted in decided improvements. He planned and constructed the cabinet cases in Vassar, Alleghany, Pittsburg, Princeton, Lafayette and other Colleges; and Cornell, Syracuse, Vanderbilt and other Universities; and also that in the new Geological Hall of the Smithsonian Institute at Washington, which is 200 feet long. He is in constant communication with the most noted naturalists, and ever ready to respond to the calls made upon him by institutions, teachers and amateurs.

Mr. Ward's books contain a record of nearly 200 normal and scientific schools, colleges and universities, to which he has furnished cabinets at prices from $500 to $35,000 each; while the smaller collections are innumerable. The Smithsonian institute, Cambridge Museum of Comparative Zoology (Agassiz's), Yale College, Princeton, State Natural History Museum, Cornell University and all the leading institutions of education and science in the land, put Mr. Ward under contribution. He and his corps of workmen, and of young naturalists, who render assistance in the special work of determining species, labelling, &c., are kept constantly busy. He has a collector now in India, another in South America, and a third in Australia; while correspondents are sending in material from all parts of the globe.

The establishment is extending its work from year to year, till it has become superior in the extent and scope of its transactions, to any other in the world. It is accomplishing an incalculable amount of good, and is an honor to our city. In one respect, in particular, Prof. Ward is bringing our colleges under great obligation to him. This is in his labor to secure the funds necessary for the cabinet from friends of the College. In this he acts under the direction of the president, or Professor of Natural Science, who aid him with letters of introduction to wealthy friends of the Institution, with which he calls on them, and presents, as he so well understands the subject—the great advantage to be derived from the desired endowment. His skill and enthusiasm in this work have secured to many an institution an entire cabinet, as a gift from wealth to the cause of education and science. His success in this direction has been very marked, giving him some such beneficient relation to the increase of college museums, as distinguished Mr. Kimball for the liquidation of church debts. The most emphatic witness which could be borne to the value and importance of Mr. Ward's establishment are the calls for specimens of all kinds which come to him from every part of Europe, from royal museums and schools of science. This, he informs us, is becoming a weekly occurrence. A similar testimonial is a recent order from Prof. Agassiz for a full series of mounted animals—mammals and birds—from all parts of the world, representative of the seven great zoogeographical provinces which zoologists have established. The catalogue of these animals covers seventy printed octavo pages, and enumerates over 2,000 genera. The Museum of Comparative Zoology at Cambridge, for which these are destined, is devoting a distinct, large hall to each of these geographical divisions. This order was received in December, and already Mr. Ward has commenced delivering it, and is fast gathering the material from all parts of the world. although some years must elapse before it is entirely filled.

I have thus undertaken to give, though in a very curtailed form and imperfect manner, without telling half, a view of what met the eyes of the city pastors in their late visit to this wonderful educational museum and treasure-house of nature.

WYOMING.

Every Naturalist in the United States and Canadas should subscribe for the Valley Naturalist, the only Naturalists' paper in the Mississippi Valley and the West.

Mr. John B. Ames of New York, referring to wood-cock-shooting, says: "I suppose I have killed more wood-cock in the last ten years than any other man of my age in New York. I have bagged as high as sixty-seven birds in one day alone in Orange County, near Campbell Hall.

Show the Valley Naturalist to your friends and induce them to subscribe.

Meteorology.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of May, 1878. Observations taken at 7 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 120° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer for the month	29.89
Highest barometer, May 2, 9 P. M.	30.10
Lowest " " 20, 2 P. M.	29.62
Monthly range	.48

THERMOMETER.

Mean temperature for the month	57.88
Mean temp. of warmest day, May 24	65.
" " of coldest day, May 29	55.
Maximum temp. May 24, 2 P. M.	81.
Minimum " " 16, 7 A. M.	47.
Greatest daily variation May 27	24.
Least " " " 21	7.
Monthly range of temperature	34.
Mean daily range of temperature	13.67

RECIPITATION (BAY NURSERY).

Rainfall in inches during the month	.40
" " " since July 1st, 1877	32.33

WIND—90 OBSERVATIONS.

Southwest and west	47
Northwest and north	8
Northeast and east	1
Southeast and south	14
Calm	23

The month was very pleasant. No unusual meteorological phenomena occurred. The light rainfall done no damage, but on the contrary was of advantage to growing vegetation and grain. The wind blew hard and strong for several days, amounting almost to a gale, but aside from this the weather was pleasant and delightful for May.

To Obtain Exquisite Skeletons of Small Animals.

Put any small subject, such as a mouse, frog (if a bird strip of its feather), in a box perferated with a number of holes; let it be properly distended to prevent the parts from collasping, or being crushed together by the presure of the earth. Then place the box and its contents in an ant-hole; and in a few days it will have become an exquisitely beautiful and perfect skeleton, by the ants having consumed every part of it except the bones and ligaments.—[*Ex.*

Naturalists having specimens for sale or exchange, will find the Valley Naturalist the best medium to advertise them in—rates low.

The following is a sure remedy for the cure of Poison Ivy: Take one pint of the bark of black spotted alder; add one quart of water and boil down to one pint. Wash the poisoned parts a dozen times a day, if convenient; it will not injure you.

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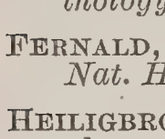

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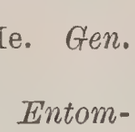

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I am desirous of obtaining as many North American *Tortricidæ* as possible for the purpose of studying this family. I shall be glad to name and return to any who will forward their *Tortricidæ* to me for this purpose, all save such as may prove new and desirable to retain for description. I should be pleased to correspond with any who intend to collect Lepidoptera in any part of North America where but little collecting has hitherto been done. Address,

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THE VALLEY NATURALIST is a monthly paper, devoted to the interests of the Naturalists of the Mississippi Valley and the West. Its object is to aid the diffusion of natural science in a popular form and to furnish a medium of recording the observations of our Western Naturalists.

We are aware that there are many scientific papers in the East, in which a Naturalist can publish the results of his observations, but there is *none* in which he can place the many minor notes that every working Naturalist daily makes, and which, for this reason, however interesting they may be, often remain forever buried in the note-book of the observer.

Instead, then, of wishing to set up as a rival to our Eastern brethren, we wish to be considered rather as aiding and supplementing their good work. Naturalists we hope will aid us both by subscribing and contributing articles for publication.

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Serials

THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., AUGUST, 1878. NUMBER 8.

Rhodora.

In May, when sea-winds pierced our solitude,
I found the fresh Rhodora in the woods,
Spreading its leafless bloom in a damp nook,
To please the desert and the sluggish brook.
The purple petals, fallen in the pool,
Made the black water with their beauty gay;
Here the Red-bird comes his plumes to cool,
And court the flower that cheapens his array.

Rhodora! if the sages ask thee why
This charm is wasted on the earth and sky,
Tell them, that if eyes were made for seeing,
Then *beauty* is its own excuse for being.
Why thou wert there, O rival of the rose!
I never thought to ask—I never knew;
But, in my simple ignorance, suppose
The self-same Power that brought me there
brought you. *Emerson.*

Mammalogy.

From C. J. Maynard's "Guide."

Collecting and Preserving Mammals.

SECTION I—COLLECTING.

Because mammals are not quite as interesting at first sight as birds, the study of this class of animals has been somewhat neglected; and but comparatively few naturalists are even aware of the existence of some of the smaller mammalia that live about them. They are, however, worthy of special attention, and, if studied, will soon be found particularly interesting.

In collecting mammals, excepting some of the larger species, the gun is of but little use; they must be taken almost entirely with traps. Shrews and Moles may be frequently found where they have been dropped by cats, who catch them, but do not eat them. In this way a great many valuable specimens may be obtained.

Another way to procure Mice and Shrews is to turn over old logs and stumps, under which these little animals frequently hide, and while dazzled by the light's coming in suddenly upon them, they may be readily seized in the hand. Mice may also be trapped.

Squirrels may be shot or caught in traps; Foxes, trapped, shot or dug out of their holes. Woodchucks are easily trapped or dug out. Skunks are very disagreeable animals to handle, but when one once becomes accustomed to capturing them he can do it in perfect safety. The best way is to catch them in a "box-trap" baited with the head of a chicken; when caught, immerse trap and skunk in water until the animal is dead. Treated in this manner, they will not emit any of their disagreeable scent. By breaking the backbone with a stout stick, when the animal is caught in a steel trap, the disagreeable emission will be prevented. All animals should be killed either by breaking the backbone or by compressing the ribs, to stop the breath; never by a blow on the head, as this is liable to injure the skull, which must be preserved entire for scientific investigation.

The following animals may be decoyed into traps by means of peculiar scents: Foxes, Fishers, Martens, Minks, Weasels, Wildcats of all species, Otters, Beavers Bears, Muskrats and Raccoons. These scents are made of different substances. The musk of the Muskrat, contained in two glands situated just below the skin upon the back part of the abdomen, will decoy Muskrats and Minks, and perhaps Wildcats. This musk may be procured from the male in early spring. After the two glands spoken of are removed, they may be cut open, when the musk—which is a milky fluid—will appear, and may be mixed with alcahol, and kept for use. This musk is used in the following manner: Cut a stick of pine about six inches long, make a small cavity in one end; into this drop a little of the musk, fasten the stick in such a position that the animal to be decoyed must place his foot upon the trap in order to reach it.

Foxes, I have been informed by old trappers, are readily decoyed by using the fetid scent of the Skunk in the same manner. This scent is a greenish fluid, and is contained in glands situated in the anal region; it may be obtained in the same manner as the musk, although the operation is not pleasant. All of the above-named animals may

ARCTOMYS MONAX.

Locality.	Age.	Sex.	Date.	No.	Nose to Eye.	Nose to Ear.	Nose to Occiput.	Nose to Root of Tail.	Nose to Outstretched Hind Leg.	Tail to End of Vertebra.	Tail to End of Hair.	Hand. Hind Leg.	Hand. Length.	Hand. Width.	Height of Ear.	Muzzle.	Girth.	Skull.* Length.	Skull.* Width.	Remarks.
			1868.																	
Ipswich.	Adult.	Male.	Aug 22	58	1.50	2.95	2.30	13.00	15.00	4.98	6.00	3.10	2.10	.78	.85	.20	—	—	—	Light Colored.
"	Adult.	Female.	" 20	55	1.57	2.80	3.45	15.50	20.15	4.50	6.75	2.80	1.85	.92	.75	—	14.50	—	—	" "
"	Adult.	Female.	" 13	43	1.32	2.94	3.45	15.25	19.50	5.45	7.60	2.95	2.05	.70	.65	.15	9.75	—	—	Top of head black.

* This measurement is taken after the animal is skinned; the width of skull is measured on the widest part, the length on the longest part.

be successfully decoyed by using an excessively fetid scent, prepared during warm weather in the following manner: Take a good-sized eel or trout, and cut it in small pieces; place it in a quart bottle, cover the top with gauze to keep the flies out, hang the bottle on the south side of a fence or building, and let it remain two or three weeks, when the whole mass will become decomposed; then on the top will be found a thin layer of a clear liquid having an ineffable disagreeable odor. This fluid should be poured off carefully into a small vial and closely corked; it is to be used in the same manner as the other scents. This receipt was kindly given to me by Mr. George Smith of Waltham, who has used it successfully, as I have personally witnessed.

Bats may be shot, or taken during daylight beneith the shingles of buildings, or in hollow trees. One or two species, however, remain outside, suspended to a branch or leaf of a tree.

Plaster may be used to absorb the flow of blood from mammals as well as from birds.

[*Continued.*]

More Albinos.

Ed. Valley Naturalist:

As the albinos are attracting some attention, I record two more. First, a pure albino Pocket Gopher (*Geomys bursarius*) which was recently send to me to be prepared and mounted. It was captured near Fort Madison, Lee County, Iowa, and belongs to Mr. Chas. Froebel of that place.

Second, a pure albino Fox Squirrel (*Scirus ludovicianus*) alive. It was captured near Payson, Adams County, Illinois, and is the property of Dr. J. M. Lionberger of this place.

Very respectfully,

M. TANDY.

Dallas City, Ill., July 22d, 1878.

Ed. Valley Naturalist:

In the July number of the VALLEY NATURALIST, I noticed an article entitled "Albinos." I would like to inform the readers of your valuable and only scientific paper in the west, that I have two albino Pocket Gophers' skins, one mounted, the other not in good condition.

Respectfully,

C. P. BLACHLY.

Manhattan, Kas., July 22d, 1878.

Entomology.

The Hymenoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 1.)

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Schneumonidæ.

Cryptus americanus, Cress. r.
" *calipterus*, Say. n. c.
Campoplex bellus, Cress. n. c.
Schneumon insolens, Cress. n. c.
" *trogiformis*, Cress. r.
" *viola*, Cress. r.
Labena grallator, Say. r.
Mesostenus longicaudis, Cress. r.
Ophion bilincatus, Say. c.
" *purgatus*, Say. c.
Himpla anmelipes, Brulle. n. c.
Trachynotus texanus, Cress. n. c.

Braconidæ.

Agathis exoratus, Cress. c.
Bracon orbitalis, Cress. n. c.
" *xanthostigma*, Cress. n. c.
Microdus sanctus, Say. n. c,
" *thoracicus*, Cress. n. c.
Microgaster maculipennis, Cress. n. c.
Toxoneuron explorator, Say. n. c.

Chalcididæ.

Chalcis ovata, Say. c.
" *tegularis*, Cress. r.
Leucopsis affinis, Say. r.
Smicra delicata, Cress. n. c.
" *dorsata*, Cress. c.
" *mariæ*, Riley. c.

Dorylidæ.

Labidus minor, Cress. c.

Mutillidæ.

Agama imperialis, Blake. r.
Mutilla aureola, Cress. c.
" *auripilis*, Blake. n. c.
" *brazoria*, Blake. c.
" *californica*, Rad. c.
" *canella*, Blake. r.
" *copano*, Blake. r.
" *creusa*, Cress. n. c.
" *electra*, Blake. n. c.
" *fenestrata*, St. Farg. c.
" *ferrugata*, Fabr. c.
" *Grotei*, Blake. n. c.
" *orcus*, Cress. n. c.
" *ornativentris*, Cress. n. c.
" *pennsylvanica*, St. Farg. n. c.
" 4-*guttata*, Say. n. c.
" *ursula*, Cress. n. c.

Scoliadæ.

Elis ephippium, Say. r.
" *plumipes*, Drury. c.
" 4-*maculata*, Drury. v. c.
" *texensis*, Sauss. v. r.
Myzine cardinalis, Cress. n. c.
" *fumipennis*, Say. n. c.
" *hamata*, Say. n. c.
" *sexcincta*, Fabr. v. c.
Scolia dubia, Say. n. c.
" *hæmatodes*, Burm. n. c.
" *nobilitata*,, Fabr. r.
Tiphia albilabris, St. Farg. c.
" *inornata*, Say. c.

[*Continued.*]

Naturalists having specimens for sale or exchange, will find the Valley Naturalist the best medium to advertise them in—rates low.

Botany.

Flora of Warren County, Missouri.

BY PROF. J. H. FRICK, CENTRAL WESLEYAN COLLEGE, WARRENTON, MO.

Abbreviations:—c. common; r. rare; v. very; a. abundant; g. gardens.

Portulacaceæ.

Portulaca oleracea, L. Purslane, c.
Claytonia Virginica, L. Spring Beauty,

Malvaceæ.

Althaea rosea, Cav. Hollyhock, g.
Malva rotundifolia, L. Low Mallow, c.
" *sylvestris*, L. High Mallow, v. r.
" *papaver*, Cav. Poppy Mallow, Col.
Sida spinosa, L. c.
Abutilon avicennæ, Gært. Indian Mallow, c.

Linaceæ.

Linum usitatissimum, L. Flax.

Geraniaceæ.

Oxalis violacea, L. Wood Sorrel, c.
" *stricta*, L. c.
Geranium Maculatum, L. Crane's Bill, r.
" *Carolinianum*, L. v. r.
Tropæolum majus, L. Nasturtion, g.
Impatiens Balsamina, L. Balsamine.

Simarubaceæ.

Ailanthus glandulosa, Desf., Chinese "Tree of Heaven."

Anacardiaceæ.

Rhus aromatica, Ait. Sweet Sumach, c.
" *toxicodendron*, L. Poison Oak, c.

Sapindaceæ.

Acer nigrum, Mx. Black Maple, a.
Aesculus glabra, Willd. Buckeye. c.
Negundo aceroides, Mœnch. Box Elder.
Staphylea trifolia, L. Bladder-nut, r.

Rhamnaceæ.

Ceanothus Americanus, L. r.

Leguminosæ.

Cassia chamæcrista, L. Sensitive Pea, c.
Cercis canadensis, L. Red Bud, c.
Baptisia alba, R. Br. Wild Indigo, r.
Baptisia leucophæa, Nutt., Indigo, r.
Lespedeza repens, Mx. Bush Clover.
Trifolium repens, L. Shamrock, v. a.
" *pratense*, L. Red Clover.
Melilotus alba, Lam., Sweet Scented Clover.
Robinia Pseuacacia, L. Common Locust, c,
Robinia hispida, L. Rose Acacia, Yards.
Wistaria consequana, Benth, Yards.

Ornithology.

Birds of Michigan.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

THE WOODPECKERS.

P. villosus—Hairy Woodpecker. A common resident, the largest spotted black and white woodpecker; sometimes called sap sucker. It nests in holes in trees chipped out by the bill as do all the families.

P. pubescens—Downy Woodpecker. A common resident, but more rare than *P. villosus*, which it intimately resembles in all respects, except in size, being only six inches in length, while the Hairy is nine. It is the smallest of all our woodpeckers.

H. pileatus—Pileated Woodpecker. A rare resident; the largest of the family here, sometimes known as the "log cock."

M. erythrocephutus—Red-headed Woodpecker. A common and well-known summer resident.

C. auratus—Flicker. The most common summer resident of the family, and well-known to every person by some one of its various names. It has "aliases" enough to ruin the character of an individual of ordinary respectability. He is known as Golden-winged Woodpecker, Pigeon Woodpecker, Wake-up, High hole, Yacker, Clape and Flicker.

S. varius—Yellow-bellied Woodpecker. Not a very common resident. Length 8.25 inches, wing about 4.75, tail 3.30. Several have been taken in Kent county this season, they arrived April 13th.

C. carolinus—Red-bellied Woodpecker. Not as common as *S. varius*. Length 9¾ inches, wing about 5 inches. First noticed this season on the 17th of March.

Of all the birds the woodpeckers are perhaps the most useful and beneficial to farmers and orchardists, their food consists almost exclusively of insects, and their bills are so constructed as to enable them to dig under the rough bark and into the crevices of trees, and with the exception of the red head, who is fond of a nice ripe cherry, they ask and receive no remuneration for their labors.

(*Continued.*)

Birds of St. Clair County, Ills.

BY WM. L. JONES, M'KENDREE COLLEGE, LEBANON, ILL.

[Paper No. 6.]

Family—*Sylvicolidæ.*

Genus—*Anthus.*

A. ludovicianus. Tit Lark. A possible resident. No specimen taken.

Genus—*Minotilta.*

M. varia. Black and White Creeper. This bird is common during spring and summer months. Arrives about April 15. Breeds. Have noticed this species quite common this summer, (1878).

Genus—*Parula.*

P. americana. Blue Yellow-backed Warbler. Not common. Occasionally seen during latter spring months. Passes north to rear young.

Genus—*Protonotaria.*

P. citrea. Prothonotary Warbler. The most common of our visitant warblers. Arrives early in May, departs late in the first month of autumn. They frequent the lakes and marshes in woods. Most generally build their nest in cavity of a decayed hollow log projecting over water. Sometimes two broods are raised in a season.

Genus—*Geothlypis.*

G. trichas. Maryland Yellow-throat. A very common summer resident. Found in vicinity of a swamp most frequently. Breeds.

Genus—*Oporornis.*

O. formosus. Kentucky Warbler. A migratory species, only noticed here during spring.

Genus—*Icteria.*

I. viridis. Yellow-breasted Chat. A bird rather rare and secluded. Arrives here generally about May 1st, leaves early in fall for more southern latitudes. The nest of the Chat is constructed in a dense thicket. Nest contains usually four eggs, sometimes five.

Genus—*Helminthophaga.*

H. pinus. Blue-winged Yellow Warbler. Rare,

H. chrysoptera. Golden-winged Warbler. Rare.

Genus—*Seiurus.*

S. aurocapillus. Golden-crowned Thrush. Rarely seen, then only during migrations. Perhaps breeds.

S. lodovicianus. Large-billed Water Thrush. Common summer resident, arrives early in spring. Breeds.

(*Continued.*)

Mineralogy.

A Splendid Collection of Minerals.

We have recently received a collection of minerals from Professor A. E. Foote, Philadelphia, and must give it credit. The collection consists of one hundred specimens, and illustrates all the principle species and all the grand subdivisions in Dana and other works on Mineralogy; every Crystalline System, and all the principle Ores and every known element. The collection is labelled with labels giving Dana's species number, the name, locality and in most cases the composition of the mineral. The following is a complete list of the specimens contained in this collection.

1 Sulphur, Sicily.
2 Coal var. Jet, El Paso Co., Col.
3 Graphite, Colfax County, N. M.
4 Copalite, Zanzibar, Africa.
5 Asphaltum, Cuba.
6 Petroleum, Petrolia, Canada.
7 Quartz, Clear, Hot Springs, Ark.
8 " Amethyst, Thunder Bay, L. Sup.
9 " Rose, Southford, Conn.
10 " Smoky, Pike's Peak, Col.
11 " Milky, Philadelphia, Pa.
12 " Green, Staten Island, N. Y.
13 " Ferruginus, Philadelphia.
14 " Chalcedony, Bijou Basin, Col.
15 " Carnelian, Germany.
16 " Agate, Agate Harbor, L. Super.
17 " Moss Agate, Texas.
18 " Flint, Dover Cliffs, Eng.
19 " Honestone, Hot Springs, Ark.
20 " Jasper, Bijou Basin, Col.
21 " Heliotrope, Bloodstone, South Park, Col.
22 " Silicified Wood, Bijou Basin, Col.
23 " Agatized Wood, " "
24 " Itacolumite, Rutherford Co. N. C.
25 Opal, Opalized Wood, Bijou Basin, Col.
26 Pyroxene, Edenville, N. Y.
27 Rhonodite, Franklin, N. J.
28 Amphibole var. Asbestos, Harford Co., Maryland.
29 Beryl, Del. Co., Pa.
30 Willemite, Franklin, N. J,
31 Garnet, Brunswick, Me.
32 Zircon, Buncome Co., N. C.
33 Epidote, Ontonagon Co., L. Superior.
34 Allanite, Amherst Co., Vir.
35 Astrophyllite, El Paso Co., Col.
36 Magnetited Muscovite, Chester Co., Pa.
37 Lepidolite, Paris, Me.
38 Albite, Pike's Peak, Col.
39 Orthoglass (white) Pike's Peak, Col.
40 " (green) " " "
41 Tourmaline, Bristol, Conn.
42 Datolite, Bergen Hill, E. J.
43 Labradorite, Orange Co., N. Y.
44 Chrysocolla, Mammoth Mine, Utah.
45 Calamine, Cranby, Mo.
46 Stilbite, Frankford, Pa.
47 Talc, Pennsylvania.
48 Serpentine, Pennsylvania.
49 Soda Nitre, Peru.
50 Halite, Eng.
51 Barite, Cheshire, Conn.
52 Celestite, Sicily.
53 Gypsum, var. Selenite, Camp Supply, Indian Territory.
54 Fluorite, Rosiclair, Ill.
55 Apatite, Burgess, Canada.
56 Calcite, Dog Tooth Spar, Mineral Point, Wisconsin.
57 Dolomite, St. Louis, Mo.
58 Corundum, Del. Co. Pa.
59 Cryolite, Ivigtuk, Greenland.
60 Wavellite, Montgomery Co., Ark.
61 Iron Meteoric, Augusta Co., Vir.
62 Magnetite (lodestone), Magnet Cove, Arkansas.
63 Franklinite, Franklin, N. J.
64 Hematite, Ishpeming, Mich.
65 Gothite, Pike's Peak, Col.
66 Limonite, Pa.
67 Pyrite, Mo.
68 Siderite, Roxbury, Conn.
69 Menaccanite, Rhode Island.
70 Ougrenite, Rockbridge Co. Va.
71 Chromite, Texas, Pa.
72 Samarskite, Mitchell Co., N. C.
73 Pyrolusite, Staunton, Va.
74 Psilomelane, Georgia.
75 Smaltite, Chili.
76 Millerite, St. Louis, Mo.
77 Zincite, Franklin, N. J.
78 Blende, Granby, Mo.
79 Greenockite, Granby, Mo.
80 Cassiterite, Durango, Tex.
81 Rutile, Magnet Cove, Ark.
82 Brookite, Magnet Cove, Ark.
83 Galenite, Col.
84 Bismuth, Monroe, Conn.
85 Oolite, Humboldt, Ia.
86 Phosphotic Natule, Charleston, S. C.
87 Molybdenite. Philadelphia.
88 Copper, Lake Superior.
89 Cuprite, Frisco Mts., Arizona.
90 Pyrrhotite, Gap Mine, Pa.
91 Chalcopyrite, Chili.
92 Malachite, Cheshire, Conn.
93 Azurite, France.
94 Stalactite, Middletown, Pa.
95 Silver, Lake Superior.
96 Proustite, Chili.
97 Embolite, Silver City, N. M.
98 Gold, Victoria, Australia.
99 Petzite, Am. Mine, Col.
100 Platinum, Urals, Russia.

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IMPORTANT TO CONTRIBUTORS.

Any article appearing in the VALLEY NATURALIST, if ordered within 5 days after publication day (the first of every month) will be printed in neat style on 100 slips at the modest price of $1.00. Thus giving the contributors a chance to secure their articles printed apart from the general matter, to sent to their friends who do not receive the VALLEY NATURALIST. This offer will be especially convenient for those who contribute lists of birds, plants, shells, insects, etc., from certain localities. All orders must be accompanied with the money. We fill all orders the same day they are received.

Directions for Sending Insects.

All letters desiring information respecting noxious and other insects, should be accompanied by specimens, the more in number the better. Such specimens should always be packed along with cotton, wool, or some such substance, in a little pasteboard box that is of convenient size, *and never enclosed loose in the letter.* Whenever possible larvæ (i. e. grubs, caterpillars, maggots, etc.) should be packed alive, in some tight tin box—the tighter the better, as air holes are not needed—along with a supply of their appropriate food, sufficient to last them on their journey; otherwise they generally die on the road and shrivel up to nothing. Along with the specimens send as full an account as possible of the habits of the insect, respecting which you desire information; for example: what plant or plants it infests; whether it destroys the leaves, the buds, the twigs, or the stem; how long it has been known to you; what amount of damages it has done, etc. Such particulars are often not only of high scientific interest, but of great practical importance.

Editorial Chat.

Mr. Theo. Pergande of this city has removed to Washington, D. C. All entomologists who have visited Prof. Riley's office in this city, have no doubt seen a very pleasant elderly gentleman there. He has gone to Washington to assist Prof. Riley, who, as stated in the April number of the VALLEY NATURALIST, has taken the place of Prof. Glover as Entomologist of the Agricultural Bureau. Mr. Pergande is well known as a coleopterist, but very shy at contributing, as we have never yet seen any of his many valuable notes, which we have from time to time perused with much interest and satisfaction. He has often promised to contribute for the VALLEY NATURALIST, but has never done so. We are sure some of our entomologists would like to see some of his notes in print.

The Rochester *Democrat* makes the statement that the surviving relatives of the late Lewis Brooks have agreed to have Professor Henry A. Ward make a botanical cabinet, at a cost of $4,000, to be placed in the hall of botany in the Lewis Brooks Museum of Natural Science in the University of Virginia. This is in accordance with the design of Mr. Brooks and is exceedingly creditable to the legatees under the will.

Send in your orders for cards, letterheads, noteheads, envelopes, etc. Every naturalist ought to have his name and address printed on his envelopes, note- or letterheads, which ever he prefers to use. By having his address printed on his envelope, he saves a great many letters from going to the "dead letter-box." Our rates are the lowest—send for estimates.

The *Naturalist & Fancier* of Grand Rapids, Mich., has stopped publication or rather consolidated with the *Western Oologist*, a lively independant amateur paper, devoting its whole space to Ornithology and Oology. Thanks for kind notice of removal of the VALLEY NATURALIST, in the July issue.

C. P. Blachly, a resident of Manhattan, Kansas, promises to have a list of the birds of Riley County (Kas.) and vicinity ready for the Septemter issue, which we know will be interesting to our ornithological readers.

Persons receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription.

We would call the attention of all interested in Mineralogy to the advertisement of the New York Mineral Agency, E. Seymour, Agent, appearing on another page.

Unless otherwise informed, subseriptions received after this day will begin with the July issue. Back numbers can always be had at the regular price.

Mr. Calkins offers some very rare land and fresh water shells for sale in another column, don't miss this chance of securing a good collection of shells.

To Correspondents.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

Answers to Correspondents.

[We will be pleased to name specimens which may be sent by correspondents. In all cases the specimens should be numbered and the exact locality and date of capture should be given. When possible, it is desirable to receive at least two specimens of each species. Should our correspondence become too voluminous, we will return the names by mail, so as to avoid filling up too much space with a dry list of names. As a great deal of time is required to name specimens carefully, we will hereafter take no notice of imperfectly preserved specimens or of specimens of which the locality is not given.]

A. H., St. Louis, Mo.:

You can get some very rare birds' eggs, both American and foreign, from Professor Ward's Natural Science Establishment, send 6 cents with your address to Rochester, N. Y. for catalogues of eggs.

C. T. B., Manhattan, Kas.:

Your postal of July 16th received; you speak of having sent your subscription for the VALLEY NATURALIST, about the last of May or first of June, we have not received it and judging from the address on the postal before us, which is simply—VALLEY NATURALIST, St. Louis, Mo. We have reasons to beleive that the letter containing the subscription went to the dead letter-box. Why can't our readers remember to write our address *in full*, thereby saving us a great deal of trouble and expense. We will not be responsible for letters and all other mail, that does not bear the address *in full.*

TO THE OWL.

BY OLIVER DON DAVIE, COLUMBUS, OHIO.

Sad feathered hero of the night,
All darkness is to thee but light,
The marsh, the thicket is thy home,
The gloomy void is all thine own,
To spread the wings of flying power
And feast within the darkest hour.
While far above where man can see
In that vast boundless canopy,
The greater ruler of the night,
Arising with its glimmering light;
Steals westward on the starry sky
In hours that pass so swiftly by.
Through days, weeks, months and years,
The orbs revolving in their spheres;
Or when the moon is gone away
Ere light has ushered in the day,
Lo! in the north is seen afar.
The twinkling of the polar star;
All this unseen by thy great sight
And naught to thee, sad bird of night.
But far on silent wing to roam,
And seek recesses called thy home;
Perhaps in some lone lofty tower,
To mark the midnight dreary hour;
Or when its curfew tolls aloud
Some dark cavern is thy shroud,
Where oft the winds and tempest rude
Disturb thy peaceful solitude,
Where trees oft beaten with the storm
But rear their splintered naked form;
There lend thy sighs to the passing gale.
Where clouds o'erhang their misty veil;
Where ages past lie in decay,
And things to come must pass away.

Conchology.

A Naturalist in Florida—Cruise of the "Rose Bud."

BY W. W. CALKINS, CHICAGO, ILL.

[Paper No. 4.]

On our return to Key West from Markesas trip, a day and a half was spent in packing and shipping home the collections made. This task completed and the wind being fair we again set sail for Tortugas, about seventy miles west. At six P. M. we anchored off Markesas for the night, the next morning opened dark and threatening with a regular "blow" in prospect. Between us and Tortugas lay a clear stretch of water forty miles in width. A portion of the time no land would be in sight, and as our master had never been so far west, and was not familiar with the course, there was some risk, should the weather be bad. However, the wind was right, so we determined to go. Markesas soon became a mere speck behind us. The wind freshened and towards noon a regular gale was blowing, but the Rose Bud proved equal to the occasion, shipping but little water and riding the huge billows with apparent ease. Such was the height of these that when our vessel was in the trough of the sea, it looked as though we were about to be buried. It was grand though, and I can say truly that none of us felt any fear at this time because we had confidence in the Rose Bud, and suppose that we were getting nearer and nearer to our destination. According to Captain Albury we should sight Tortugas Lighthouse about twelve o'clock. The hour came but no beacon appeared and a misty haze covered the horizon. We had steered the vessel, of course, by the charts and compass, but no allowance had been made for the drifting of our little craft under the united influence of the gale and the gulf stream, and it was found that we were ten miles off the proper course. Taking my glass, Albury climbed to the masthead and scanned the horizon, but it was almost one o'clock before he made out dimly Loggerhead Key light at least twelve miles away.

Our present course would have surely taken us to Cuba or beyond, or else the vessel would be recked on the reefs around Tortugas. The entrance to the harbor could only be gained by altering our course and heading the Rose Bud up sharply in the wind. This was no pleasant task in the state of the weather, but there was no alterative—we were between Scylla and Charybdis. With coolness and promptness our sailors, assisted by Bill the cook, brought the vessel to, but so suddenly that in doing it a tremendous wave washed the vessel from stem to stern. However, the hatches were down and everything tight. As the wave struck I stood by the mast, Dr. Brown sat on a box near by, absorbed in meditation. All the rest were on duty, none of us made any unnecessary remarks, but probably thought a great deal. The gallant Rose Bud staggered for a moment under the shock, then suddenly shaking of the mass of water, rose above them and shot forward like a thing of life. After this we experienced some rough seas, but in about an hour were in the open channel leading to the harbor. The vessel was not kept strictly in this as we had no pilot and could not always discern it. The last quarter was run over shallows, where the next day when the gale subsided, huge boulders of coral rock appeared above the surface in about two feet of water. At two o'clock we anchored under the walls of Fort Jefferson quite satisfied with the trip. We found here a half dozen soldiers, the Lighthouse keepers and a few stray fishermen. These were the only inhabitants of Garden Key, Fort Jefferson covers the whole of it, and contains an area of fifteen acres.

The walls are built of brick and extend entirely around the Key in the form of a hexagon. They are 50 feet in height and pierced for three hundred guns, I think there were that number mounted when we were there. the bull dogs of war pointed to every part of the compass. A deep moat surrounds the fortress, this is eighty feet in width, and across it on the eastern side is the only entrance by means of a drawbridge. An immense iron gate closes this. The old lighthouse stands within the walls. Here also are large brick buildings for soldiers' quarters, in the open parade ground are a few stunted specimens of Mangrove trees and a green of Bermuda grass.

Massena the light keeper, cultivates a few roses which trail over his cottage, otherwise everything is bare. There are six other keys in the group, all smaller than the Garden Key and in times of storms subject to overflow. They are of coral origin and the last link in the long chain extending southwards from the mainland at Key Biscayne. Being completely isolated, they present a novel and forlorn aspect. Uncle Sam has spent millions here, but wherefore I can not see. Except as a station for the storage of military ornaments or a harbor of refuge. Tortugas has no importance, during the rebellion several thousand prisoners were confined in Fort Jefferson, among them Mudd and Spangler. I was told that a few of the prisoners escaped, but none of these were ever heard of afterwards, and it is supposed that they perished while attempting to reach the main land in a small boat. No garrison is kept here now beyond a few soldiers under the command of a non-commissioned officer, who looks after the government property. There is no regular communication with the north of Key West. But fishing vessels come there, and occasionally travellers like ourselves drop down on the solitary inhabitants. I venture to say, however, that very few appear here on the same business that brought my party.

During our visit I saw enough to satisfy myself that a naturalist might spend some weeks with profit. The Keys are simply extinct coral reefs, they are surrounded by living reefs of the wonderful coral builders, in a former paper I gave a list of the species that do the work of making continents, and which are found here in abundance. What are known in cabinets as "finger corals" seem to be the most prolific, and flourish in water from three to fifteen feet deep. The large brain corals and the Astreas grow in masses, the smaller kind are found in shallow water, and a number of specimens were taken from the walls of the Fort, which the lighthouse keeper claimed were from two to six years old, these belong to the *Astrea* group and measured from one to three inches long and an inch in thickness, of course the coral polype must be supplied with pure sea water or it can not work or live.

The rate of growth depends much on the surroundings and no certain standard can be given. The species found here might be studied for months with advantage. We had no time for this, but collected a large quantity of specimens. A number of rare shells were also obtained, and some fine sea urchins of several species not easily found elsewhere. We also secured several cuttle fish (*octopus*) one of these I brought up with a boathook in a mass of finger coral to which it was clinging, it measured two feet across the extended arms, and now adorns my cabinet.

Having spent several days here, Dr. Brown and myself returned to Key West with Major Smith on his supply schooner, which chanced to arrive. Dr. Velie remained and loaded the Rose Bud with corals, he then joined us. Over thirty barrels of corals were shipped to the Chicago Academy, as the results of this expedition, besides several barrels of shells. We then refitted the vessel and made another cruise among the Keys and to Cape Sable.

Geology.

Terrestrial Magnetism.

BY PROF. RICHARD OWEN, INDIANA STATE UNIVERSITY, BLOOMINGTON, IND.

Since the statement of facts on this and collateral subjects, in a former number of the VALLEY NATURALIST, daily observations with the galvanometer have been continued: all corroborating the results therein given, with one exception. It may be well briefly to restate the general results and then give the exception.

1. In this part of Indiana, and probably all through the valley of the Mississippi, there are so-called currents of electricity in the earth's crust, near the surface, and, doubtless also at greater depths, flowing from east to west, due probably to the greater heat at a given moment at points east of any latitude, when compared with points west, because as the earth revolves from west to to east on its axis, the eastern localities sooner receive the warning rays of the sun.

2. We have also currents running from the southerly portion of our continent, to the more northerly, due to the thermal difference between tropical or sub-tropical and N. temperate or Arctic regions. These currents from the south, so far as observed in Indiana, give nearly twice as much deflection of the galvanometer, as the currents from the east; consequently the mean resultant would be currents from somewhere between S. S. E. and S. E. treading between N. E. and N. N. E.

3. It was mentioned in some communications that the needle had sometimes refused to settle when the wires to the galvanometer came from rods which ranged from each other in certain points of the compass. In several instances the direction of the storms, as detailed in various journals (such as the Iowa storm of May 23d last and the Missouri storm of June 1st), coincided or nearly so with the record on those days giving the current in the range of some of the iron rods which showed electrical or magnetic storms in the crust of the earth. Usually on those days the electrical disturbance in the atmosphere was indicated by the needle oscillating and not inclining to settle, but when it did for a moment, the deflection was more than double the ordinary record.

4. It was formally stated that, so far as experiments had then tested, the facts, when one wire connected with some metal in the earth, the other with some metal above ground, say stove, lightning rod, &c., the curreut was *from* the atmosphere *to* the earth.

The exception above alluded to, is found, provided the lightning rod is short, as when attached to a one or two story house, and when it runs six or eight feet into the ground, then the current may sometimes blow *from* the tank or scrap iron reservoir of metal *to* the lightning rod, instead of the contrary, as always occurs when one wire connects with the college lightning rod, or that from the Court House, where instead of being only about 30 or 40 feet high, the rod extends from 75 to over 100 feet into the air.

5. To illustrate these currents and to show their effect in varying the needles from the geographical north, we may use a globe, although a block of wood or a simple stick with an upward curve may serve to illustrate the phenomena of declination and inclination under the following conditions. Place in a direction from S. S. E. to N. N. W. on the globe, block or stick, which should stand north of you, many coils of iresulated wire, wound as you face them, from right up and over to left, in other words contrary to the motion made by the hands of a watch, being careful to clamp to the positive poles the wire which starts from your right, while the wire which ends on your left is attached to the binding screw of the negative pole. Then operate your battery and test for variation, &c., with a delicate magnetic needle held in your hand by means of a cork, having a sewing needle thrust through the cork, as a pivot for the magnet. Now if your stick supports the coil high enough from the table, you can carry the magnetic needle all around the coil and observe the results. Let the upper part of the coil represent the western Hemisphere, the lower part the eastern Hemisphere. You will find the American agonic line (an imaginary line connecting all the places in that part of the globe, where the needle points to the geographical north) running from near the eastern middle of your coil in a N. N. W. direction both upward and downwaad, toward the magnetic north pole, where your needle will be reversed and point with its marked end to the interior of your coil. Another agonic line corresponding to the Asiatic, which starts through the western part of Australia, will be found in an imaginary irregular place, passing nearly vertically through the southwest part of your coil, somewhat parallel to the American northwest agonic place terminated by the rather irregular circle first described. On the upper part of the coil, between the American agonic on the east and the Asiatic agonic on the west, the variation will be found more or less to the *east* of north. Underneath the coil the needle will take the same direction which for a spectator, viewing the coil from below, would give the more or less *western* variation observed through all but eastern Asia. The anomalies in eastern Asia and near mid Pacific can perhaps be accounted for when we ascertain exactly how all the thermo-electrical currents run. Tropical Africa may send currents as well in a north-easterly as in a north-westerly direction, which would thus account for the crossing in western Africa of the variation lines.

6. Thus the sun, besides being the main source for light and heat for our earth, seems by these thermal differences to be the immediate cause of electrical currents in the earth and hence remotely also the cause of Terrestrial Magnetism; a fact apparently further proved by the diurnal and annual variations, as well as by the supposed modification of magnetic dip through greater or less proximity of the sun to the earth.

Look out for the September issue—No. 9, If you are not already a subscriber, subscribe before that time.

Meteorology.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of June, 1878. Observations taken at 7 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 120° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer for the month.....	29.87
Highest barometer, June 1, 7 P. M.....	30.09
Lowest " " 12, 7 A. M....	29.75
Monthly range.....	.34

THERMOMETER.

Mean temperature for the month.....	59.34
Mean temp. of warmest day, June 30..	64.
" " of coldest day, June 15....	55.66
Maximum temp, June 30, 2 P. M.....	80.
Minimum " " 24, 7 A. M.....	50.
Greatest daily variation June 30.....	27.
Least " " " 15.....	7.
Monthly range of temperature.....	30.
Mean daily range of temperature.....	13.90

June passed without the excessive warm days that usually occur. The mean temperature was some lower than the average for the month, but the mean for the first six months was the average of the first half of other years. The mean of 1877 was 55.18, that of 1878; 52.62, making a difference of only .44 of a degree. April was warmer than the average, and June compensated. The law of meteorological compensation seems to be well established as regards temperature in Oakland, and observations go to show the same prevails as regards the rainfall. To establish this fact will be of great importance to the agricultural interest if to no other.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

ILLINOIS STATE LABORATORY OF NATURAL HISTORY. Bulletin No. 2. 1878. Normal, Ill.

This volume contains the following papers:

List of the Aphidini of the U. S. By C. Thomas.

A new species of Aphis (*Colopa eragrostidis*). By N. Middleton.

A list of the Mosses, Liverworts and Lichens of Illinois. By J. Wolf and E. Hall.

A catalogue of the Fishes of Illinois. By D. S. Jordan.

On the Food of Illinois Fishes. By S. A. Forbes.

On the Crustaceæ Eaten by Fishes. By S. A. Forbes.

Description of a new species of Asellus. By O. P. Hay.

Of these articles the fourth, fifth and sixth are especially noteworthy. Much credit is due to Professor Forbes for his able management of this institution, which is the only purely scientific educational institution ever established in the west.

THE NATURALISTS' DIRECTORY. Published by SAMUEL E. CASSINO, Salem, Mass. 1878.

The Naturalists' Directory for 1878, containing the names of the Naturalists of America, North of Mexico, just received. It is quite an improvement on last year's directory, and contains nearly twice as many names and addresses; the directory for 1878 containing 2524, while that for 1877 only contained 1431 addresses. It also contains a list of scientific societies in the United States.

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FRICK, PROF. JNO. H., Warrenton, Mo. *Botany*, Collection.

HUGHES, W. H., Grand Rapids, Mich. *Mineralogy, Geology*, Ex.

HEILIGBRODT, L., Bastrop, Texas. *Entomology, Reptiles.*

JONES, WM. L., Lebanon, St. Clair County, Ill. *Ornithology.*

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MONELL, J., Mo. Botanical Gardens, Saint Louis, Mo. *Botany, Entomology.*

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VOLUME I. SAINT LOUIS, MO., SEPTEMBER, 1878. NUMBER 9.

'It is a lonely place, and at the side
Rises a mountain rock in rugged pride;
And in that rock are shapes of shells, and [forms
Of creatures in old worlds, and nameless [worms—
Whole generations lived and died, ere man,
A worm of other class, to crawl began."
—[*Crabbe.*

Entomology.

The Hymenoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 2.)

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Pompilidæ.

Agenia accepta, Cress. n c
" *Belfragei*, " "
" *mellipes*, Say. "
Aporus fasciatus, Sm. "
Ceropales bipunctata, Say. r
Notocyphus texanus, Cr. r
Pompilus æthiops, Cr. n c
" *algidus* Sm. c
" *cinctipes*, Cr. n c
" *ferrugineus*, Say. n c
" *interruptus*, " "
" *marginatus*, " "
" *philadelphicus*, St. Farg. n c
" *tropicus*, Linn. c
Priocnemis alienatus, Sm. v r
" *conicus*, Say. n c
" *flammipennis*, Sm. n c
" *fulvicornis*, Cr. c
" *Heiligbrodtii*, Cr. v r
" *nuperus*, Cr. n c
" *terminatus*, Say. n c
Pepsis dubitata, Cr. r
" *formusa*, Say. n c
" *marginata*, Beauv. v c

Sphegidæ.

Ammophila grossa, Cr. v r
" *Gryphus*, Sm. c
" *intercepta*, St. Farg. c
" *pictipennis*, W. c
Chlorion cacruleum, Drury. n c
Pelopocus cacruleus, Linn. v c
" *cementarius*, Drury, c
Priononyx atrata, St. Farg. c
" *Thomae*, Fabr. v c
Sphex abdominalis, Cr. r
" *Belfragei*, Cr. r
" *bucephala*, Cr. r
Sphex flavipes, Sm. v r
" *habena*, Say. n c
" *ichneumonea*, Linn. v c
" *illustris*, Cr. r
" *lauta*, Cr. v r
" *pennsylvanica*, Linn. c
" *rufiventris*, Cr. n c
" *texana*, Cr. c
" *tibialis*, St. Farg. c

Larridæ.

Astata bicolor, Say. r
" *rufiventris*,
" *unicolor*, Say. r
Larrada argentato, Beauv. c
" *terminata*, Sm. r
Tachytes distinctus, Sm. v c
" *elongatus*, Cr. c

[*Continued.*]

Botany.

Flora of Warren County, Missouri.

BY PROF. J. H. FRICK, CENTRAL WESLEYAN COLLEGE, WARRENTON, MO.

Abbreviations:—c. common; r. rare; v. very; a. abundant; g. gardens.

Rosaceæ.

Prunus americana, Marsh; Red Plum.
P. Pennsylvanica, L. Wild Red Cherry.
P. cerasus, L. Sour Cherry.
P. serotina, Ehr. Black Wild Cherry, c.
P. vulgaris, Mill. Peach.
P. lanceolata, Dwarf Flowering Almond.
Spiræa opulifolia, L. Ninebark, r.
S. sorbifolia, g.
S. camædrifolia, Colorado.
S. dumosa, Nutt. "
S. lanceolata, g.
S. aruncus, L. Goats beard, r.
Gillenia stipulacca, Nutt. Bowman's Root.
Rubus villosus, Ait. High Blackberry, c.
R. deliciouses, Torr. Colorado.
R. canadensis, L. Northern Dauberry.
Fragarta, Virginicana, Ehr. Strawberry. c.
Potentilla Norvegica, L. c.
P. Canadensis, var. *pumila*, L. c.
Amelanchier Canadensis, T. & G. r.
Cratægus tomentosa, var. *plicata*, B'k Thorn
C. spathulata, Mx. Haw.
Pyrus communis, Pear.
P. malus, Apple.
P. coronaria, L. Wild Crab-tree.
Cydonia Japanica, Japan Quincy.

Saxifragaceæ.

Heuchera hispida, Ph. Alum Root. r.
Philadelphus inodorus, L. False Syringa.
Ribes rubrum, L. Common Red Current.
R. aureum, Ph.
R. rotundifolium, Mx. Gooseberry.
R. gracile.

Onagraccæ.

Epilobium augustifolium, L. Willow Herb, Colorado.
Œnothera cæspitosa, Nutt. Colorado.
Œ. coronopifolia, T. & G. "

Ficoideæ.

Mesembryanthemum chrystallinum, L. Ice Plant, Hot-house.

Umbelliferæ.

Polytænia Nuttalii, D.C.
Fœniculum vulgare, Adaus Fennel.

Cornaceæ.

Cornus florida, L. Flowering Dogwood.

Caprifoliaceæ.

Triosteum perfoliatum, L. Feverwort, n. c.
Symphoricarpus vulgaris, Mx. Snowberry. c.
Lonicera Tartarica. Tartarian Honeysuckle.
L. caprifolium, Italian Honeysuckle.
Sambucus pubens, Mx. Elder, v. c

[*Continued.*]

Geology.

Earth Currents.

The action of the currents of electricity that pass round the earth may be conveniently exhibited to a large audience by the following arrangement, devised by Professor W. Le Roy Broun: A regtangular frame of light poplar wood is suspended horizontally by wires attached to the frame of a hydrostatic balance, its longer sides in the magnetic east and west line, and at right angles with the beam of the balance. About the perimeter of the frame are previously wrapped a number of coils of insulated copper wire, each extremity of the wire being made to terminate near the center of one of the shorter sides; it is there passed through the wood, fastened, and cut off about 3 centimeters from the frame. The index of the balance being brought to zero point, the ends of the short terminal wires are immersed in two mercury cups for electrical connection. When the battery current is sent round the rectangle from east to west on the northern side, and from west to east on the southern, the northern side is attracted and the southern is repelled, and the corresponding deflection of the balance renders this plainly visible. When the current is reversed, the deflection is in the opposite direction. By breaking and closing the circuit at proper intervals, to augment the oscillations, Professor Brown easily made the large frame oscillate through an arc of 5°. When the sides of the rectangle were placed N. E. and S. W. the current produced no sensible effect.—*Scientific American.*

Ornithology.

Birds of St. Clair County, Ills.

BY WM. L. JONES, M'KENDREE COLLEGE, LEBANON, ILL.

[Paper No. 7.]

Genus—*Dendroica.*

D. virens. Black throated Green Warbler. A rare transient spring visitor.

D. Canadensis. Black-throated Blue Warbler. Rare.

D. coronata. Yellow Rump Warbler. A very common spring visitor.

This warbler arrives in this vicinity about April 10th, several days before the arrival of any other of the warbler species. Is most commonly noticed about orchards, gardens, etc. By May 15th they have all passed northward to breed. In early fall they return to this locality, though not so abundant as in spring.

D. blackburniæ. Blackburnian Warbler. Rarely noticed during migratory seasons.

D. castanea. Bay-breasted Warbler. Not common.

D. pinus. Pine-creeping Warbler. Rare, no specimens procured.

D. Pennsylvanica. Chestnut-sided Warbler. A variety frequently seen in spring. Rare in fall.

D. cærulea. Blue Warbler. Common spring visitor.

D. striata. Black-poll Warbler. Rare.

D. æstiva. Summer or Yellow Warbler. A common summer resident. Arrives here, May 1st, breeds.

D. maculasa. Black and Yellow Warbler. Common spring visitor. One of the most beautiful of our warblers.

D. palmarum. Yellow-red Poll. A common species. Only noticed during spring migrations.

D. superciliosa. Yellow-throated Warbler. Transient visitor.

N. B.—Have never noticed the breeding of any of the above species here, excepting *D. aestiva.*

(*Continued.*)

Birds of Kansas.

BY C. P. BLACHEY, M. D., MANHATTAN, KANSAS.

The following birds have been identified by me within the last two years; having been taken within fifteen miles of Manhattan, Kansas. The order of arrangement adopted in this list is that of Dr. Coues' "Check-list of the Birds of North America."

Turdidæ—Thrushes and Mocking Birds.

Turdus migratorius—American Robin. Resident; once rare, but becoming more common every year. A few individuals remain through the winter. Generally abuudant in spring migration.

T. mustelinus—Wood Thrush. Summer resident; common in the timber.

Mimus polyglottus—Mocking-bird. Summer resident, quite common.

M. Carolinensis—Cat-bird. Summer resident, quite common.

Harporhynchus rufus — Brown Thrush. Summer resident, abundant.

Saxicolidæ—Blue-birds.

Sialia sialis—Eastern Blue-bird. Summer resident, common.

Sittidæ—Nuthatches.

Sitta Carolinensis — White-bellied Nuthatch. Resident, abundant.

Troglodytidæ—Wrens.

Cistothorus palustris—Long-billed Marsh Wren. Probably breeds in Kansas.

Alaudidæ—Larks.

Eremophila alpestris—Horned Lark. Resident, abundant; moves in flocks in the winter, and is commonly called "Snow-bird."

Sylvicolidæ—Warblers.

Dendræca æstiva—Yellow-poll Warbler. A summer resident, common.

Seiurus noveboracensis — Small-billed Water Thrush. Migratory, rare.

Icteria virens—Yellow-breasted Chat. A summer resident, common.

Tanagridæ—Tanagers.

Pyranga rubra—Scarlet Tanager. Summer resident, common.

Hirundinidæ—Swallows.

Hirundo horreorum—Barn Swallow. Summer resident, occurs throughout the State.

Cotyle riparia—Bank Swallow. Summer resident, common.

Progne purpurea—Purple Martin. Summer resident, common.

Ampelidæ—Waxwings.

Ampelis cedrorum—Cedar-bird. Resident, common in localities.

Vireonidæ—Greenlets.

Vireo olivaceus—Red-eyed Vireo. Summer resident, common.

Laniidæ—Shrikes.

Collyrio borealis—Butcher Bird. Fall and winter visitant.

Fringillidæ—Finches and Sparrows.

Plectrophanes ornatus—Chestnut-colored Bunting. Resident in middle and western Kansas.

Spizella socialis — Chipping Sparrow. Summer resident, not common.

Zonotrichia querula—Harris' Sparrow. Migratory throughout the State; especially abundant in spring.

Chondestes grammaca—Lark Finch. Summer resident, abundant.

Euspiza Americana—Black-throated Bunting. Summer resident, abundant on the prairie.

Goniaphea cærulea—Blue Grosbeak. A summer resident in western Kansas.

Cyanospiza cyanea—Indigo-bird. Summer resident, very common.

Cardinalis Virginanus—Red-bird. Resident, common.

Pipilo erythrophthalmus—Chewink; Towhee Bunting. Summer resident, common.

Icteridæ—American Starlings; Blackbirds.

Dolichonyx oryzivorus—Bobolink. Summer resident, common in spring.

Molothrus pecoris—Cow-bird. Summer resident, abundant.

Agelœus phœniceus—Red-winged Blackbird. Summer resident, abundant.

Xanthocephalus icterocephalus—Yellow-headed Blackbird. Summer resident, often in the same flock with the Cow-bird.

Sturnella magna—Meadow Lark. Summer resident, abundant.

Var. *neglecta*—Western Lark. This variety, though closely resembling the common Meadow Lark, has a different song, and presents certain well marked and constant differences of plumage. Both varieties are abundant in Kansas.

Icterus spurius—Orchard Oriole. Summer resident, common.

I. Baltimore—Baltimore Oriole. Summer resident, common.

Quiscalus purpureus—Crow Black-bird. Summer resident, abundant.

(*Continued.*)

Meteorology.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of July, 1878. Observations taken at 7 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 120° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer of the month	29.87
Highest barometer, July 24, 2 P. M.	30.00
Lowest " " 1, 7 A. M.	29.71
Monthly range	.29

THERMOMETER.

Mean temperature for the month	59.20
Mean temp. of warmest day, July 12	64.33
" " of coldest day, July 31	56.33
Maximum temp. July 12, 2 P. M.	79.
Minimum " " 31, 7 A. M.	52.
Greatest daily variation July 12	24.
Least " " " 17	9.
Monthly range of temperature	27.
Mean daily range of temperature	13.06

RECAPITULATION (BAY NURSERY).

Rainfall in inches during the month	00.00
" " " since July 1st, 1878	00.00

WIND—93 OBSERVATIONS.

Southwest and west	33
Northwest and north	17
Northeast and east	2
Southeast and south	13
Calm	28

The month of July was uniformly cool; but little variation of temperature existed. the mean morning temperature of the month was 54.64°, with only 5° difference between maximum and minimum temperature. Mean noon temperature 67.41; difference in extremes 16° The comparative temperature of of the years of 1876, '77 and '78 are quite a curiosity:

	1876	1877	1878
Mean temp. of warmest day	10.01	61.35	59.20
" " of coldest day	64.	66.	64.33
Maximum temperature	84.	81.	79.
Minimum " "	52.	51.	52.
Greatest daily variation	31.	27.	24.
Least " "	6.	8.	9.
Mean barometer for month	29.86	29.84	29.86
Mean relative humidity	86.30	83.60	87.05
Number of clear & fair days	27.	29.	28.

Without records of reference it would hardly seem possible that such an uniformity of meteorological phenomena could exist from year to year. The extremes of compensation are very little, and are almost daily compensated either by an increased or diminished temperature. This, however, is the temperature of Oakland, but a short distance inland, the heat is torrid, parching and crisping upon animal and vegetable life. Although the heat is much greater than in the Central and Atlantic States, still there is not the oppressiveness about it as there, for conversation with those who have experienced the extreme heat in both sections of the country and been exposed out of doors to the direct rays of the sun and the various vicissitudes of the weather, a temperature of 100 to 114° can be borne here much easier than there. Many times when the heat ranges only from 80 to 90° in the shade here, the atmosphere is dry, all moisture is quickly taken up, the skin and lungs are robbed rapidly of the natural secretions, the system feels the heat in a far different way than there, and it is quite questionable whether not of a more permanent and dangerous character. By inquiry of those who have observed fatal cases from the effects of heat here, the symptoms are entirely different from those who perish where the heat is less than the normal temperature of the body. If this observation be true, it is worthy the attention of the pathologist, as well as the physiologist, to enquire into the pathological difference in death from the cause of heat.

Missouri Weather Service—July, '78.

PROF. F. E. NIPHER, DIRECTOR, ST. LOUIS.

July has been warm and dry. At the Central Station, the mean temperature has been 81.6 the normal July temperature being 79.2. The temperature of the 2d decade (10th to 20th) was 88.4. The highest temperature reached was 97. on the 16th and 17th. In 1860 a July temperature of 104 was reached, while June of 1870 gave a temperature of 101.5 The lowest temperature of last month was 62.5 on the 3d.

The rainfall was 2.87 in., the average July rainfall has been less than for the past July, 14 times out of 39.

During the second decade, 154 persons died in St. Louis from sunstroke, 41 cases occuring on the 15th. It is worthy of note that the maximum temperature did not then occur, nor was this the warmest day, the mean temperature of days preceding and following being greater. The relative humidity was, however, greater on the 15th than for days immediately preceding and following. The cause for the large mortality is doubtless to be found in the summation of various prejudicial influences, which reached a maximum at that time.

In the State, high temperatures have been observed as follows: Neosho 96° on the 13th, Lebanon 95.5, 14th; Ironton 102, 20th; Boonville 101, 15th; Lexington 95, 15th; Hamilton 102, 13th, and 100, 15th; Oregon 95.5, 13th.

The rains in the State have been very local in character. The greatest monthly rain was at Chillicothe 7.57 and Oregon 7.18. The least rainfall was at Bolivar 0.50, and St. Charles 0.70. On the 1st a heavy rain occurred over most of the State, a rain of 4.38 being recorded at Chillicothe as occurring in 8 hours

The present report has been delayed by reason of our work in terrestrial magnetism in this state.

Meteorological Repart of Monticello, Jones County, Iowa.

BY M. M. MOULTON, MONTICELLO, IOWA.

The weathor for the past month of August has been dry and hot. Although the mean temperature and amount of rainfall is about normal, yet in the monthly distribution of the same it left the ground exceedingly dry, and the atmosphere exceedingly hot. The highest temperature reached for the month was 92° on the 18th, against 89 degrees last year. The lowest temperature was 57° on the 30th, against 48° last year.

The mean temperature for the month was 70.9° against 70.1° last year. The month as a whole has been about normal. The temperature of well-water was 50° or 1° above last year. Rain fell on 6 days against 5 days last year. Total amount of rainfall was 3.07 in. against 6.75 inches last year, which was about normal. It thundered and lightened on the 15th, 17th, 19th, 20th and 23d. It was foggy on the 9th, 20th and 22d, and hazy on the 29th.

A meteor was visible on the evening of the 31st. The N. W. was the prevailing wind, as follows, viz.: n. w. 10 days, calm 5 days, n. e. 4 days, s. w. 4 days, w. 4 days, s. e. 3 days, and s. 1 day.

It was clear on 4 days, cloudy on 2 days, stormy on 6 days, foggy on 2 days, and hazy on 1 day.

The mean temperature for the summer months of June, July and August, 1878, was 71.8° against 69.9° last year, and was 1.6° above the normal.

Mammalogy.

From C. J. Maynard's "Guide."

Collecting and Preserving Mammals.

SECTION II—MEASURING.

To measure a mammal preparatory to skinning, place it upon its back, then with the dividers measure the distance from the tip of the nose to the front side of the eye, record this as "the distance from the tip of nose to the eye," then from the tip of the nose to the ear; this is "the distance from the nose to the ear;" then from the tip of the nose to the occiput, or back of the head, for "the distance from the nose to the occiput." With the rule find the distance from "the nose to the root of the tail," also the distance from "the tip of the nose to the tip of the longest toe of the outstretched hind leg;" then with the dividers find the length of the vertebra of the tail from the root, this is "the length of the tail to the end of the vertebra." With the dividers, measure the hair on the end of the tail for "the length of the hair." Measure the length of the hind leg from the knee-joint to the tip of the longest toe for "the length of the hind leg." Measure the length of the front leg from the elbow-joint to the tip of the longest claw of the longest toe, this is "the length of the front leg." The width of the hand is found by measuring the the width of the outspread forefoot or hand. Now measure the length of the ear on the back side, from the skull to the tip, for "the length of the ear." Measure "the width of the muzzle" between the two nostrils; in animals larger than a gray squirrel, measure the "girth" with a tape-measure, or piece of string, just back of the forelegs.

These measurements will answer for all excepting the bats, in measuring which, proceed as before; but, instead of the forelegs, find "the length of one wing," "the length of the wing to the hook or thumb," and "the stretch of wings" as in birds.

Seals also vary slightly; instead of the word "leg" use "flipper" and find the width of the hind flipper as well as the width of the fore one; also in addition, "the distance between the fore-flippers." The sex of a mammal is easily determined without dissecting. These measurements are to be first recorded upon a strip of paper, and afterwards copied into a book, as seen in August number, first page.

SKINNING.

To skin a mammal, place it upon its back; make a longitudinal incision in the skin over the abdomen, extending from the root of the tail about one fourth of the length of the body. Peel down each side, pushing forward the leg so as to expose the knee-joint; sever the leg from the body at this place, and clean the bone; proceed in this manner with the other leg. In small animals, sever the tail as close to the body as possible, leaving the bone in; but in large animals it can generally be removed by placing two pieces of wood on each side of the bone against the skin, holding them firmly in place with one hand, and after giving a strong pull with the other the tail will slip out easily. With some animals, such as the Beaver, Muskrat, Skunk, etc., this can not be done; then the skin of the tail has to be opened the whole length, and the bone removed. Proceed to draw the skin down towards the head, until the forelegs appear; sever these at the knee-joint, and clean the bone as before. Draw the skin over the head, cutting of the ears close to the skull. Use caution in cutting the skin from the eyelids and in severing the lips from the skull, so as not to injure their outward appearance. The skull is to be detached entirely. Cover the inside of the skin well with arsenic, and if large, rub it in well with the hand, but be sure that every part is poisoned.

(*Continued.*)

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The Great Siberian Mammoth.

The Great Siberian Mammoth (*Elephas primigenius*, Blum.) whose remains were found, in the year 1799, frozen in the ice banks at the mouth of the river Lena, in Siberia. The skeleton now stands in the Museum of the Imperial Academy of St. Petersburg. This restoration is made from bones of a larger individual in the Royal Museum of Stuttgard, Wirtenburg. Height, 16 feet; length, including forward curve of tusks, 26 feet. From Prof. Henry A. Ward's Natural Science Establishment, Rochester, N. Y. Will be exhibited by the Inter-State Industrial Exposition Company of Chicago, in their great exposition building from September 4th to October 19th, 1878.

This grand and imposing restoration of the most majestic and colossal of all extinct land animals known to science, is offered for sale by Professor Ward at the close of the Exposition, or at any time after October 19th, 1878, for the sum of $4,000. No more valuable or suitable gift than is this specimen, could be made by a gentleman of wealth and liberality to the museum of a college or of a scientific society. Its presence in their museum hall would give the institution possessing it, a lasting fame and scientific repute throughout the entire continent.

Unless otherwise informed, subscriptions received after this day will begin with the July issue. Back numbers can always be had at the regular price.

The St. Louis Fair and Exposition.

The Industrial Exposition opens Monday, the 9th day of September, 1878, the Live Stock, Floral, Fruit, etc. departments commence Monday, the 7th day of October, and closes Saturday the 12th day of October.

The exhibition in the *Geological, Chemical and Mineral Department* begins Monday September 9th, 1878. It is very desirable that all articles entered be ready for exhibition on the first day of the Exposition, and exhibitors are urged to commence their arrangements in time. If not ready by 10 o'clock A. M., Monday, September 9th, they will not be considered as competing. Size of collections, quality or selectness of their component articles, and systematic and tasteful arrangement, will be necessary to entitle any collection or display to a premium.

Each specimen in Classes A and B is expected to be correctly labelled with name of specimen and locality in which it was found. No collection or part of collection of minerals shall be awarded more than one premium. Each article in collections of natural and artificial curiosities must be appropriately labelled. The Awarding Committees will not make awards in any case where the article or collection exhibited is not meritorious, nor when not in readiness or proper condition for their inspection.

CLASS A.

Best collection of Minerals from any part of the world.....	$125
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" " Zinc Ores.....	$ 15
" " finely Crystallized Specimens, including Cut Gems.....	$ 25
" " Native Metals, Metalliferous Quartz and Ores from the Territories.	$ 50
Best collection of samples of Lapidary work done in Missouri..... Diploma and	$ 10

CLASS B.

Best coll'n of Ethnological specimens, Mound-builders' and other Ancient Pottery..	$ 75
Best collection of Fossils.....	$ 40
" " Insects.....	$ 40
" " Shells.....	$ 15
" " Natural and Artificial Curiosities, Relics, etc.....1st	$ 75, 2d $ 25
Best display of Taxidermic specimens.....1st Diploma and	$ 40, 2d $ 20

Editorial Chat.

Mr. Otto Lugger, formerly of this city, and lately Curator of the Baltimore Academy of Science, has gone to the West Indies, on a scientific trip.

Persons receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription.

Send in your orders for cards, letterheads, noteheads, envelopes, etc. Every naturalist ought to have his name and address printed on his envelopes, note- or letterheads, which ever he prefers to use. By having his address printed on his envelope, he saves a great many letters from going to the "dead letter-box." Our rates are the lowest—send for estimates.

In response to a notice of the consolidation of the *Naturalist and Fancier* with the *Western Oologist*, appearing in the editorial columns of the August issue, the latter publication makes the following statement:

The VALLEY NATURALIST for August mentions something to the effect that the *Naturalist and Fancier* had consolidated with this paper. There was some talk of it; but as nothing satisfactory could be reached, we laid aside all thoughts of so doing.

It is very pleasing to see so much interest taken in science by the fairer sex. In the Chemical Section of the A. A. A. S., Misses E. S. Richards and Alice Palmer have a very good paper on "Antimony Tannate." In Section B. (Natural History) though a great many ladies were present, only one paper was presented—"Extracts from Modern Science Bearing on the Law of Repitition," by Miss V. Bowers. The centre of attraction in this Section was Miss E. A. Smith, whose amusing description of her experiments on *Coccidæ* occasioned much merriment. We also noted the presence of Mrs. Bassnett, the lady botanist, and Miss M. Murtfelt of entomological renown.

The St. Louis meeting of the A. A. A. S. has been very successful, and we have been informed that after the payment of all expenses the Association have a balance of several hundred dollars in their favor. Were it not too extensive an undertaking, we should be pleased to give abstracts of the many interesting papers presented. Persons desiring information as to the proceedings, will be pleased to hear that the N. Y. *Herald* has issued its usual pamphlet "extra" on the

An Electrical Globe for the Exhibition of Magnetic Declination

present meeting. The regular volume of Transactions published by the Association will probably not be in print for several months. Among the addresses delivered before the association, none attracted such general attention as that of Professor Newcomb. In this truly remarkable paper, Professor Newcomb clearly defines the limits between Science and Theology, and has done much to clear away from the minds of his audience the idea that there can be any real conflict between Religion and Science. There is something about the informality and the absence of that spirit of rivalry, too common in scientific assemblies, that give a peculiar charm to the meetings of this Association. The new alteration in the constitutions of the Entomological Club is deserving of much praise. The next meeting will be held at Saratoga.

Ward's Catalogues.

We have recently received a complete set of catalogues from Prof. WARD'S well-known Natural Science Establishment Rochester, New York.

The stock of Natural History material now on hand at this establishment is unquestionably far greater in the aggregate than at any similar Institution in the world. Professors of Natural Science and collectors in any department will be surprised and delighted at the abundant choice of specimens which they will find here.

His catalogues of Special Departments will be mailed to all parties requesting them and enclosing price of same, as given in the following list. To teachers requesting them with the intent expressed to purchase specimens, they will be sent gratis:

Catalogue of Minerals, 48 pages, Price 20 cts. Catalogue of collection N. Y. State Rocks, 44 pages, Price 20 cents. Catalogue of Casts of Fossils, 228 pages; 284 Wood Cuts, Price $1.25. Catalogue of School Series of Casts, 52 pages; 68 Wood Cuts, Price 20 cents. Catalogue of Academy Series of Casts, 80 pages; 130 Wood Cuts, Price 30 cents. Catalogue of College Series of Casts, 136 pages; 230 Wood Cuts, Price 75 cents. Catalogue of Osteology, 64 pages, Price 25 cents. Catalogue of Skins and Mounted Specimens (with Alcoholic Specimens), 74 pages, Price 30 cents. Catalogue of North American Birds' Eggs, 12 pages, Price 6 cents. Catalogue of Foreign Birds' Eggs, 12 pages, Price 6 cents. Catalogues of Invertebrates, 100 pages; 120 Wood Cuts, Price 50 cents. Catalogue of Human Skeletons and Anatomical Preparations, 24 pages, Price 15 cents. Catalogue of Glass Models of Invertebrates, 22 pages, Price 10 cents.

Advertisers—see rates on last page, they are the very lowest.

Gambs' Display of Foreign and United States Postage and Revenue Stamps at the St. Louis Fair and Exposition.

On our visit to the Exposition on the opening day, we were surprised to see a splendid display of postage and revenue stamps, both Foreign and United States, by that well-known and reliable stamp importer—Mr. E. F. Gambs, of this city. The collection is displayed in the Textile Hall (formerly the old Floral Hall). Among them we notice the following which are known among stamp collectors as very rare and scarce:

Triangular Cape of Good Hope and New Foundland; complete set of Prince Edwards Isle; New South Wales; complete set of 1854; Phillippine Islands and Luzin; complete sets of Mozambique, St. Thomas and Prince Island; Angola; Peru, unpaid leather; Newspaper stamps of 1863, complete set.

Mr. Gambs publishes a splendid stamp paper of eight pages, illustrated with from ten to twelve engravings of the latest stamps, also much other valuable information relating to stamps. Everybody interested in stamps should send for a specimen copy.

To Correspondents.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

Read our list of Missouri Entomological Reports, and other equally valuable books for sale, on another page. Price is the very lowest, compare with other lists.

Answers to Correspondents.

[We will be pleased to name specimens which may be sent by correspondents. In all cases the specimens should be numbered and the exact locality and date of capture should be given. When possible, it is desirable to receive at least two specimens of each species. Should our correspondence become too voluminous, we will return the names by mail, so as to avoid filling up too much space with a dry list of names. As a great deal of time is required to name specimens carefully, we will hereafter take no notice of imperfectly preserved specimens or of specimens of which the locality is not given.]

J. K., Denver, Col.:
The eggs you send were packed so poorly that not one whole one remained in the lot. Use cotton between the eggs instead of stiff wrapping paper.

The Valley Naturalist is the only paper containing articles of every branch of Natural Science.

H. P., Belleville, Ill.:
You can obtain the articles you mention in your letter of June 15th, at Professor Ward's Natural Science Establishment, Rochester, N. Y. We think he makes fossils his specialty.

Remember the address of the Valley Naturalist is Room 36, N. W. cor. Third and Pine Streets, St. Louis, Mo.

J. McM., Carondelet, Mo.:
The gentleman you speak of, Mr. F. G. of San Francisco, Cal., is a reliable dealer, and we guarantee that you will be satisfied with the skins.

We will always be pleased to name specimens which may be sent by our friends.

H. T., Montreal, Can.:
We have at present only one Taxidermist in this city to our knowledge, that one is Mr. Bates, located at 720 Locust street. You will find his work satisfactory.

Naturalists who are not already subscribers, should subscribe immediately.

M. A., Newport, Ind.:
A. E. Foote, M. D. of Philadelphia, can supply you with any quantity of eggs; see his advertisement on another page. We have no dealer in this city.

N. V., Venice, Ill.
We can supply you with Missouri Entomological Reports. You will see them advertised on another page, under the heading of the VALLEY NATURALISTS' AGENCY.

and Inclination. Illustrated. See No. 10, October Issue.

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THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., OCTOBER, 1878. NUMBER 10.

An Electrical Globe for the Exhibition of Magnetic Declination and Inclination.

BY PROF. RICHARD OWEN, INDIANA STATE UNIVERSITY, BLOOMINGTON, IND.

Having recently constructed a globe encircled by insulated wire, along which I can pass a current of electricity and thereby exhibit the relation of a magnetic needle to said current. I subjoin a description of the construction and utility of such a globe. To facilitate the understanding of its construction, I annex a diagram of the globe with its wire and battery.

Having demonstrated the fact, as mentioned in a former number, that currents of electricity were constantly passing, in this portion of our earth's crust, from east to west and from south to north, as indicated by a delicate galvanometer, I desired to produce on an artificial globe a similar effect. This can be done (instead of making the globe rotate as the earth does, from west to east) by coiling the wire from east to west. being careful that the east end connects with the positive pole of the battery.

To prevent the wooden globe from splitting, I had it made of some nine or ten pieces of seasoned inch plank, well glued together and allowed to dry thoroughly before it was placed in the turning lathe. The globe may be a sphere nine or ten inches in diameter; I had it made slightly spheroidal, the calibre at the part intended to represent the equator being about 1-10 of an inch greater than at the poles. Into these latter poles I had two pieces of hard wood inserted to serve as axes, on which the globe could turn readily, if desired, when mounted on its small light frame. From latitude 70° north or thereby going south I had minute grooves cut, very close to each other and extending to about latitude 70° south. I then, by the aid of strong glue (laid with a brush into the first few grooves at the north to keep the wire in place) commenced coiling insulated copper wire, No. 22, from my right hand over to my left, while holding the globe in my lap; with the north end from me, and leaving a few feet of the beginning wire uncoiled, for insertion into the battery. I then pressed the wire into the glue-laid channels, by means of a hard bone handle, until the glue was dry enough to hold the wire in position. Thus I proceeded, an assistant facing me and turning the globe and laying on glue, while I ran out more wire and forced it into the grooves with the bone handle, making in all about 140 or 150 circles of coils.

The globe was then placed in its frame, and the east or right wire inserted into the binding screw of the carbon plates, in a bichromate of potassa battery, while the terminal or left hand wire connected with the zinc or negative pole.

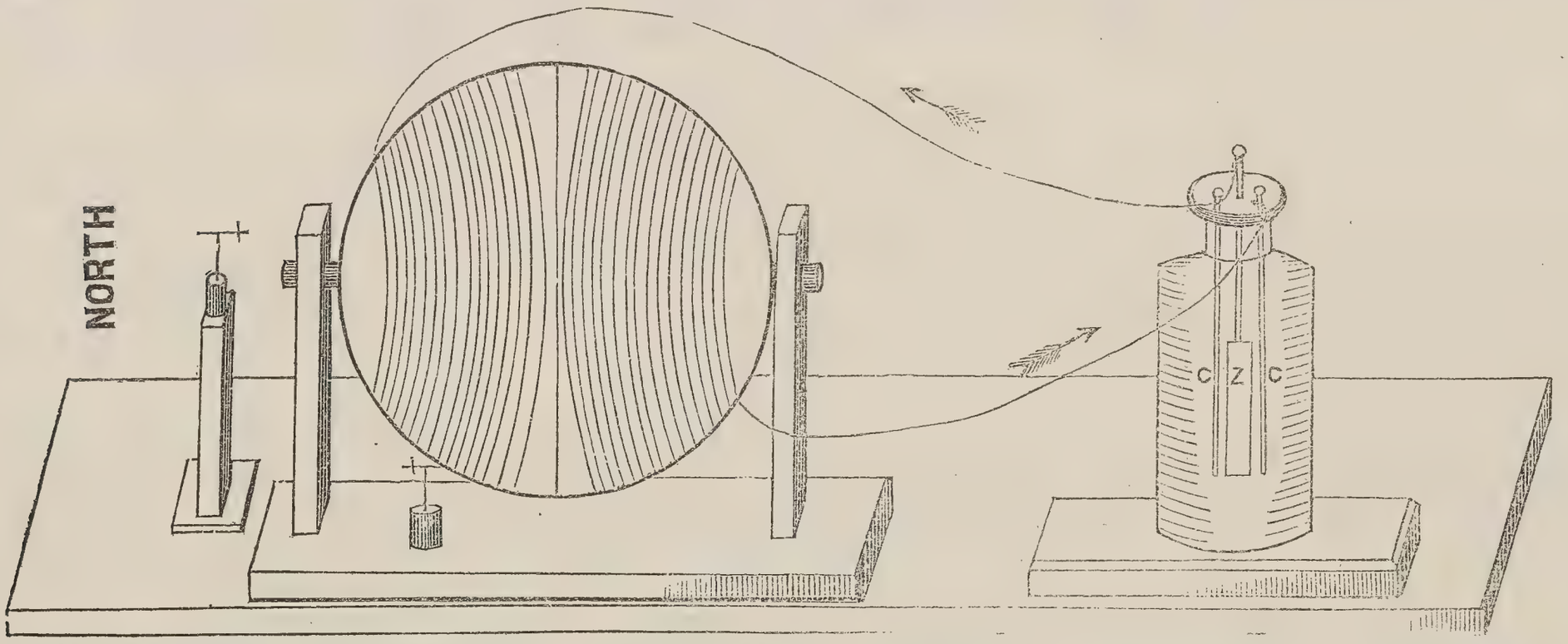
Using now sensitive magnetic needles which oscillated on sewing needles, thrust through corks, I set the globe with its north end to the north and placed one of these small magnetic needles on a block opposite the arctic circle. Of course, the needle, while the battery was not at work, pointed a little east of north (here about 6°); but as soon as I depressed the zinc into the liquid, the magnetic needle was instantly reversed and pointed with its marked end to the south as indicated in the diagram. This effect arises from the law pointed out by Persted, that when a so-called current of electricity is passing along a wire coiled as a helix or solenoid, the needle will point at right angles to this current, if the electricity is strong enough, but whichever way it points outside the coil, the position of the needle will be just the reverse when brought inside or even opposite the inside coil, at either end. This is shown perfectly in my globe, for when the needle is presented anywhere within the antarctic circle, it is reversed, just as at the arctic circle. By placing the needle on the top of the globe, the variation or declination will be found to be east. By care there can be a sinuous line found near the east side of the globe, all along which line from south of the equator, up to the point which may represent Sir John Ross' magnetic north pole, there will be no variation. This may represent the agonic from S. America by the W. Indies; N. Carolina; Cleaveland, Ohio; Hudsons Bay, etc. to the magnetic north pole.

Another agonic or line connecting places of no variation, may be traced with care (holding the needle in the hand and moving it east or west until it points to the true geographical north) along a sinuous line on the west side of the globe, beginning in a southern latitude, about where Australia would be (if the American agonic be on the east side) and following it up we pass Hindoostan and enter the Caspian, etc.

Between these two agonics, namely from Austrailia through the Pacific to America, the variation is at present east, as laid down in Guyot's Map of Physical Geography, or any similar exhibit of the variation of the needle. But carry the needle to the east of the American agonic line and you will find it pointing west, say in the latitute of Boston and still more so when you reach Labrador.

Of course all this would be more satisfactorily traced if I had laid down the great continents on my wooden globe, as I design doing.

If the frame of the globe is high enough to permit the needle to be now placed under the globe, the magnet or compass will be found to assume the same position which it did when placed above. That absolute direction however, which to an inhabitant on this side of the globe (represented by what is now at top) would be eastern variation, must necessarily be to an inhabitant on the the opposite side of the globe (which we



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represent as being below) western variation.

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By taking the globe out of its frame and allowing it to rest on its south pole or axis, while the north points upward, we can by use of a delicate dipping needle, show that the marked end of the needle becomes vertical or nearly so when suspended over the arctic circle.

Other interesting details connected with this illustrative apparatus might be given, if it were not for making the communication too long.

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Entomology.

The Hymenoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 3.)

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Bembicidæ.

Bembex californica, Cress. n c
B. nubilipennis, Cress. r
B. monodonta, Say. v c
Monedula Carolina, Fabr. v c
M. 4-fasciata, Say. r
M. ventralis, Say. c
M. formosa, Cress. c
M. pictifrons, Smith, r
M. neglecta, Cress. r

Nyssonidæ.

Alyson melleus, Say. n c
Gorytes moneduloides, Pack. n c
G. rufoluteus, Pack. n c
Nysson texanus, Cress. n c
Stizus speciosus, Drury, n c
S. texanus, Cress. n c
S. fervidus, Cress. r

Crabronidæ.

Cerceris fumipennis, Say, c
C. bicornuta, Guer. c
C. venator, Cress. c
C. firma, Cress. c
C. compacta, Cress. c
C. Kennicottii, Cress. n c
Philanthus ventilabris, Fabr. c
P. punctatus, Say. c
P, dubius, Cress. n c
Trypoxylon politum, Say. n c
T. texense, Sauss. v c

Eumenidæ.

Eumenes Belfragii, Cress. n c
E. Bollii, Cress. r
Alonobia quadridens, Linn. v c
Odynerus clusinus, Cress. v c
O. verus, Cress. v c
O. firmus, Cress. v c
O. foraminatus, Sauss. n c
O. fulvipes, Sauss. c
O. fundatus, Cress. c
O. bellulus, Cress. r
Pterochilus 5-fasciatus, Say. r
Rhygchium dorsale, Fabr. c

[*Continued.*]

Botany.

Flora of Warren County, Missouri.

BY PROF. J. H. FRICK, CENTRAL WESLEYAN COLLEGE, WARRENTON, MO.

Abbreviations:—c. common; r. rare; v. very; a. abundant; g. gardens.

Rubiaceæ.

Galium concinnum, T. & G., cleavers, c
G. aperine, L. Bedstraw, c

Compositæ.

Vernonia fasciculata, Mx., Iron Weed.

This is found in great abundance on dry uplands and is quite troublesome in pastures.

Eupatorium ageratoides, L. v a
Aster auzureus. Lindl.
A. amethystinus, N.
A. novæ-angliæ, L.
A. tradescanti, L.
Erigeron Canadense, L., White Weed, c
E. bellidifolium, Muhl., Robin's Plantain, c
Bellis pereunis, Garden Daisy.
Solidago canadense, L., Goldenrod, c
Ambrosia bidentata, Mx., Horse-weed, c
A. psilostachia, DC., Rag Weed, v c
Hauthium Strumarium, L., Clot-weed.

This is a very abundant weed, and is commonly called the "cuckle burr" by the farmers.

Helianthus annuus, L. Great Sunflower.
H. grosse-servatus, Martens.
Coriopsis aurea, Ait. Tick Seed
Bidens bipinnata, L. Spanish Needles.
B. chrysanthemoides, L. Burr-marigold.
Dysodia chrysanthemoides, Lagasca, False Dog-fennel, v c
Hellenium autumnale, L.
Authemis cotula, L. Mayweed, this is commonly called dog-fennel, v a
Achillæa Millifolium, L. Millfoil, Yarrow.
Leucanthemum Parthenium, Godrou.

Fever Few.

Gnaphalium polycephalum, Mx. Everlasting.
Antennaria plantaginifolia, Br. Mouse-ear everlasting, c
Erechtites hieracifolius, Raf. Fire-weed.
Senecio aureus, L. Groundsel, c
S. lobatus, Pers. Butterweed, c
Tegetes patula, Frence Marigold.
T. erecta, African Marigold.
Cirsium lanceolatum, Scop. Common Thistle
C. discolor, Spr. c
Lappa officinalis, Allinoni, Burdock.
Cynthia Virginica, Dou.
Hieracium Gronovii, L. Hawkweed.
Taraxacum Dens-leonis, Less. Dandilion.
Lactuca Canadensis, L. Trumpet Milkweed.
L. sativa, Garden Lettuce.

Lobeliaceæ.

Lobelia amœna, Mx.
L. inflata, L. Indian Tobacco.

[*Continued.*]

The Utilization of Weeds.

Ralph Waldo Emerson has described weeds as plants whose use has not been discovered. Too often men are content to call a plant a weed and then proceed to exterminate it without making any attempt to find out its possible uses. An Indian writer, Mr. Geo. W. Strettell, considers from his experience gained in the Indian Forest Department that a large revenue might be derived from such plants, especially those yielding fiber—plants which require no care in cultivation, which will grow in land utterly unsuited to any other crops, and which yield fiber practically proved to be well adapted to the manufacture of paper and textile fabrics. He advocates the cultivation, at first if need be experimentally, and on a small scale, of several different plants, and especially of one, the *Calotropis gigantea*. The fiber of this plant has been pronounced by paper makers and manufacturers of textile fabrics as excellent; and he shows convincingly that after allowing for the cost of cultivation and of extracting the fiber, the raw material might be sold at such a price as to add considerably to the Imperial revenue.

Next to the discovery of plants yielding products now in demand for industrial or medical purposes, we may rank the invention of new uses for the products of plants now considered useless. But a small portion of the vegetable world has yet been made tributary to man; and from past experience it is safe to predict that even the most noxious of weeds may yet prove to be of the highest utility.—[*Sci. Am.*

Meteorology.

Meteorological Report of Monticello, Jones County, Iowa.

BY M. M. MOULTON, MONTICELLO, IOWA.

The temperature for the month of September, has been about normal. The first half was quite dry and the last half was quite wet. The highest temperature reached for the

month was 90° on the 5th inst. against 87° last year.

The lowest temperature was 38° on the 12th against 42° last year. The mean temperature for the month was 61.2° against 65.1° last year, and 61.3° in 1876, and was about normal. The temperatnre of well-water was 50° or 1° above last year.

The first appearance of frost for the season was on the morning of the 11th inst., the temperature sank to 37° at day light, 7 days earlier than last year, making 92 days without frost against 99 days last season. No particular damage done, for the corn and other farm products had been out of the way of a light frost for several weeks.

Rain fell on 7 days against 3 days last year. The total amount of rainfall was 6.30 inches against 1.47 inches last year, and was 2.83 inches above the normal. It thundered and lightened on the 4, 7, 8, 18, 19, 24, 25. 29 and 30. Zodical light was visible on the evening of the 18, 20, and 26. It hailed a little on the 25 and 29. A light frost was visible on the mornings of the 11, 12, 13, 14, 21, 24 and 27.

Pigeons were flying south on the 23d, Wild Geese on the 25th, Robins on the 27th, Blue birds on the 28th, Snakes were out sunning themselves on the 30th. South-east was the prevailing wind as follows, viz.: s. e. 7 days, s. w. 6 days, n. w. 6 days, s. 5 days, w. 3 days, n. e. 2 days and n. 1 day. It was clear on 8 days, cloudy on 6 days, stormy on 7 days, frost on 7 days and hot on 4 days.

Missouri Weather Service—Aug., '78.

PROF. F. E. NIPHER, DIRECTOR, ST. LOUIS.

For the month of August, the mean temperature at the Central Station was 78° 7′, which is 2° above the normal. The highest temperature reached was 94° 5′ on the 24th. In 1850 and in 1861 an August temperature of 101° 5′ was observed. The lowest temperature reached was 59° 8′ on the 26th.

The rainfall was 5.06 inches, the average August rainfall being 4.03 inches. The rainfall has been greater than for the past August, 14 out of the 39 years ending 1878. In 1848 there was an August rainfall of 9.74 inches, while in 1873 there was a rainfall of 0.04 inches. only.

In the state, the rainfall was least in the Northwest and in the Southwest, being in these districts less than 1.0 inch. At Big Creek, in the East, occurred the maximum, 5.86 inches. On the 24th, high temperatures were registered at different Stations, as follows: Warrensburg 105°, Hopkins and Harlem 100°, Clinton, Corning and Springfield 98°, Lexington 97°, Carthage and Boonville 97° and Sedalia 96°.

During the month, numerous local storms occurred. On the 8th there was a storm at Big Creek (South of Lincoln Co.) which arose at 6 P. M., continuing 37 minutes, during which time 0.90 inches of rain fell. At Canton on the 19th there was the heaviest storm of the summer. A severe storm visited that place on the 24th also. On the 21st Springfield was visited by a storm which severely damaged fruit and ornamental trees, grape vines, &c. The storm began at 6 P. M. At 6:30 P. M. the rain, which had, up to that time, been falling in torrents, was accompanied by a fall of hail, which lasted for 30 minutes, doing much damage to the trees and corn; stripping the former of of their foliage and breaking down the latter. There was no loss of life.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of Aug, 1878. Observations taken at 6:30 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 122° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer of the month	29.85
Highest barometer, Aug. 24, 7 A. M.	30.04
Lowest " " 19, 9 P. M.	29.69
Monthly range	.35

THERMOMETER.

Mean temperature for the month	59.55
Mean temp. of warmest day, Aug. 9	65.
" " of coldest day, Aug. 19	57.
Maximum temp. Aug. 9, 2 P. M.	77.
Minimum " " 17, 6:30 A. M.	53.
Greatest daily variation Aug. 8	22.
Least " " " 14	6.
Monthly range of temperature	24.
Mean daily range of temperature	12.25

RECAPITULATION (BAY NURSERY).

Rainfall in inches during the month	00.00
" " " since July 1st, 1878	00.00

WEATHER.

Number of clear and fair days	26
Number of cloudy days	5
Number of days in which rain fell	3
Number of mornings of low fog	1
No. of mornings of overcast high fog	16

WIND—93 OBSERVATIONS.

Southwest and west	29
Northwest and north	15
Northeast and east	0
Southeast and south	14
Calm	35

August gave scarcely any meteorological phenomena that was unusual. The equability of temperatures show only 5° of difference for the morning, 15° for noon and 6° for evening, with a mean daily range of 12.25°.

The comparative mean temperature of the month with the past two years is, for 1876, 59.61°; for 1877, 60.54°; for 1878, 59.55°. However, the small amount of diminished temperature had the result of making a perceptible effect upon the increased number of overcasts or high fogs and keeping the atmosphere too cool, much of the time, for comfort.

Send in your orders for cards, letterheads, noteheads, envelopes, etc. Every naturalist ought to have his name and address printed on his envelopes, note- or letterheads, which ever he prefers to use. By having his address printed on his envelope, he saves a great many letters from going to the "dead letter-box." Our rates are the lowest—send for estimates.

The Supposed New Metal Mosandrum.

It will be remembered that under the name of *mosandrum* Mr. J. Lawrence Smith recently described the radical of an earth that he had isolated from certain American gadolinites. The French chemist, M. Marignac, a high authority in these matters, having examined specimens of the supposed new metal, sent him by Mr. Smith, pronounces them nothing but terbium. At the same time he acknowledges the fact that from the spectroscopic studies of M. Soret there must be recognized in these minerals a metal which appears to be new to science. It is not the *mosandrum* of Mr. Smith, however, but the radical of an earth isolated by M. Delafontaine, and rightly considered by him entirely new.—*La Nature.*

Naturalists who are not already subscribers, should subscribe immediately.

New Fish.

The Gloucester fishermen are rendering Professor Baird and the cause of science very valuable aid by bringing in from the fishing banks many curious kinds of fish, heretofore thrown away as of no value. In this manner much is learned concerning the presence on the grounds visited by fishermen of Arctic ond European fish. The schooner Marion, Captain Joseph W. Collins, lately arrived from a bank trip, brought in three strange fish. Two were sharks, entirely new to North America, if not indeed to science. The other was a fish of the genus *haloporphyrus*, but of undescribed species.–*Sci. Am.*

We are always pleased to receive articles and notes of natural science for publication from our friends.

Zonites Alliaria, Mill.

About three years ago I first discovered this European species of mollusk in the greenhouses of Chicago, where it has now become naturalized, being conveyed to our shores on imported plants. When fresh the animals have a strong smell of garlic, hence the name. I do not think that any author has noticed its advent except myself, if so, there is no record of it.

W. W. CALKINS.

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Yours, &c.,

W. C. EGAN.

Chicago, September 11, 1878.

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Editorial Chat.

We are sorry to appear so late before our readers, but on account of pressing business, it was impossible for us to issue the VALLEY NATURALIST any sooner.

Unless otherwise informed, subscriptions received after this day will begin with the July issue. Back numbers can always be had at the regular price.

Read our list of Missouri Entomological Reports, and other equally valuable books for sale, on another page. Price is the very lowest, compare with other lists.

John Akhurst, Esq., dealer in the finest quality of Carlsbader and Klaeger entomological pins, etc. has removed to No. 32 Nassau street, Brooklyn, N. Y. See his advertisement on another page.

Persons receiving copies of the NATURALIST who are not subscribers, will please regard it as an invitation to subscribe. From all interested in natural science we earnestly solicit a subscription.

At the Missouri Botanical Gardens there is at present blooming a specimen of *Bonapartea Juncea*. The plant is about 25 years old, and is, we beleive the first one which has ever bloomed in the United States.

Mr. Cuthbert Powell, formerly editor and proprietor of the *St. Louis Live Stock and Produce Review*, now connected with the *Kansas City Price Current*, paid us a visit on the 19th of October. We were all glad to see little "Bert's" smiling face again. He left on the evening train for Kansas City.

L. Heiligbrodt, our entomological contributor of Bastrop, Texas, who has been supplying the VALLEY NATURALIST with lists of the lepidoptera and hymenoptera of Bastrop County, Texas, promises to have a list of the coleoptera of that locality ready for publication in the December number of the VALLEY NATURALIST. We know it will find many interesting readers.

In a collection of gems and ornamental stones recently received from Prof. Foote, is a natural curiosity in the shape of an insect embedded in a piece of amber. It is well preserved, and as far as visible, complete. the antennæ, legs, sting and wing-covers being plainly visible to the naked eye. Being as we termed it—a natural curiosity, we thought it worthy of note.

We recently received two photographs of the Great Siberian Mammoth (*Elephas primigenius*) from Professor Henry A. Ward's Natural Science Establishment, which is on exhibition in Chicago, until October 19th. By referring to page 44, September issue the reader will find a discription of this mammoth. One is a side view, the other a front view. They can be seen at our office.

The Valley Naturalist is the only paper containing articles of every branch of Natural Science.

Thomas E. Bean, Esq., of Galena, Illinois, an enthusiastic lepidopterist, called at our office on the 19th inst. He had visited all the places of interest in the city of St. Louis, among them we may mention the Great St. Louis Exposition and Fair; Shaw's Missouri Botanical Gardens; Tower Grove Park; Lafayette Park; the Public School and Mercantile Libraries which furnish many fine works for the working naturalist. He noticed at the Exposition a splendid collection of insects which, it is rumered, is the property of Miss M. Murtfelt, of Kirkwood, Mo. Mr. Bean promises to contribute occasionally, and we are sure his articles will interest all our entomological readers.

Agents, this is a splendid chance to add another good paying publication to your list. A liberal per centage allowed.

The Imported Cabbage Butterfly, (*Pieris rapæ*, Schrank.) has reached St. Louis. This insect was imported in 1857 or 1858, it was observed and taken by a Canadian entomologist in 1859 at Quebec. From that place as a centre it has rapidly spread to the West, and more rapidly to the South, reaching Washington some years since. During the years 1876 and 1877 it entered the state of Michigan and was observed by Prof. A. J. Cook, Professor of natural history in the State Agricultural College at Lansing, Michigan, where it commenced a thorough work of extermination; and September, 1878, brings it to Missouri, as numerous specimens have been observed and captured by entomologists in this city. We shall be thankful for information as to its progress in other parts of Missouri as well as from other states, let us hear from our Illinois friends. Our next issue will bring an interesting description of this butterfly, and its habits.

Ornithology.

Birds of St. Clair County, Ills.

BY WM. L. JONES, M'KENDREE COLLEGE, LEBANON, ILL.

[Paper No. 8.]

Genus—*Myiodioctes.*

M. mitratus. Hooded Warbler. A rare transient visitor.

M. posillus. Green Black-cap Flycatcher. Rare.

Genus—*Selophaga.*

S. roticilla. Red Start. This handsome and active little bird is very common here during the summer months. They arrive here about May 1st. Depart early in September. Breed, nesting in low bushes.

Genus—*Pyranga.*

P. rubra. Scarlet Taneger. Common summer resident, arriving late in spring. During spring and early summer this brilliant bird is commonly seen in orchards and small groves, while in the latter part of summer they mostly frequent dense timber. Breeds. Nests found on low branches of forest trees.

P. aestiva. Summer Red Bird. A bird not so common here as the preceding. Breeds.

Family—*Hirondinidæ.*

Genus—*Hirundo.*

H. horreorum. Barn Swallow. Common summer visitor. Breeds. Nest usually constructed at a considerable height from the ground under the eaves of some large building.

H. Lunifrons. Cliff Swallow. An abundant summer resident. Several hundred often construct their nests together on the same building. Usually arrive about April 15, depart late in September.

H. bicolor. White-bellied Swallow. Not common, occasionly seen late in spring. Perhaps breeds.

Genus—*Cotyle.*

C. riparia. Bank Swallow. A common species. Breeds in high banks of earth or sand. Eggs small in size. Color pure white. As many as ten eggs found in a nest. Departs southward September 10.

Genus—*Progne.*

P. purpurea. Purple Martin. A very common summer resident. Arrives early in spring, about April 1st. Breeds.

Family—*Bombycillidæ.*

Genus—*Ampelis.*

A. cedrorum. Cedar Bird. A common winter and summer resident. In winter seen here in flocks, often twenty in the band. Large bands of young birds noticed late in summer. No instances known of its breeding here. In winter it feeds entirely on persimmons while here in this vicinity.

(*Continued.*)

Advertise in the Valley Naturalist—the only Naturalists' paper West of the Mississippi.

Birds of Kansas.

BY C. P. BLACHEY, M. D., MANHATTAN, KANSAS.

Corvidæ—Crows, Ravens and Jays.

Corvus Americanus — Common Crow. Resident, abundant.

Cyanurus cristatus—Blue Jay. Resident, abundant.

Tyrannidæ—American Fly-catchers,

Tyrannus Carolinensis — King-bird; Bee Martin. Summer resident, common.

Caprimulgidæ—Goatsuckers.

Chordeiles Virginianus — Night-hawk. Summer resident, common.

Cypselidæ—Swifts.

Chatura pelagia—Chimney Swallow. Summer resident, once rare but becoming common.

Trochilidæ—Humming-birds.

Trochilus colubris—Ruby-throated Humming-bird. Summer resident, common.

Alcedinidæ—King-fishers.

Ceryle alcyon—Belted King-fisher. Summer resident, common.

Cuculidæ—Cuckoos.

Coccyzus Americanus—Yellow-billed Cuckoo. Summer resident, common.

Picidæ—Woodpeckers.

Hylotomus pileatus—Black Wood Cock. Summer resident, rare.

Picus villosus—Hairy Woodpecker. Resident, abundant.

Centurus Carolinus—Red-bellied Woodpecker. Summer resident, abundant.

Melanerpes erythrocephalus—Red-headed Woodpecker. Summer resident, abundant.

Coloptes auratus—Golden-winged Woodpecker. Resident, abundant.

C. Mexicanus—Red-shafted Woodpecker. Migratory, not uncommon in eastern Kansas, abundant in western Kansas.

Strigidæ—Owls.

Bubo Virginianus — Great Horned Owl. Resident, common.

Scops asio — Screech Owl. Resident, abundant.

Otus Wilsonianus—Long-eared Owl. Migratory, common.

Syrnium nebulosum—Barred Owl. Resident, common.

Falconidæ—Diurnal Birds of Prey.

Astur atricapillus—Goshawk. Migratory.

Falco communis—Duck Hawk. Resident, rare.

Buteo Harlani—Harlan's Hawk. Migratory, rare.

B. borealis—Red-tailed Hawk. Resident, common.

B. pennsylvanicus—Broad-winged Hawk. Migratory, rare.

Archibuteo lagopus, var. *sancti-johannis*—Rough-legged Hawk. Winter visitant, common.

(*Continued.*)

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Birds of Michigan.

BY W. H. HUGHES, GRAND RAPIDS, MICH.

Perchers.

This order is the largest in species, and contains the great mass of our familiar birds. It is divided into three sub-orders, *Strisores*, *Clamatores* and *Oscines*, and these again into numerous families, genera, etc. In enumerating them the name of the family and the scientific and common name of the species will be given.

Strisores.

Trochilidæ—Humming Birds. This family includes the smallest and most beautiful of all the birds. They are exclusively confined to America, and are most numerous in the torrid zone, where they swarm in incredible numbers. The different species amount to about three hundred, and new ones are being continually discovered by naturalists. Of this immense number of species but one visits us.

T. colubris — Ruby-throated Humming Bird. A common summer resident, whose arrival in the spring is hailed with joy by all. It rears its young here, and its nest is a wonderful piece of architecture. The eggs are two, of a pure white. The nest on account of its diminutive size is rarely found.

Cypselidæ—The Swifts.

C. Pelasgia—Chimney Swallow. A common and well-known summer resident.

Capimulgidæ—Goat Suckers.

A. vaciperus—Whipperwill. A common summer resident, which on account of its nocturnal habits is seldom seen, but well-known by its familiar and peculiar cry. An erroneous notion is entertained by some that this bird is identical with, or is at least the female of the night hawk. The fact is that the species differ materially in their plumage and habits, and their eggs are quite easily distinguished.

C. Papetue—Night Hawk. A more common and abundant resident than the Whippoorwill.

The birds of this family build no nests, but lay their eggs in a small hollow scratched in the ground, and in some cases even this slight attempt at a nest is omitted, and the eggs, two in number, are laid upon the bare ground without any preparation. The eggs of both species are desirable in the cabinet of the naturalist.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

KEYSERLING, EUGENE, COUNT.

American spiders of the suborder *Citigradæ*. From the Zool. Bot. Gezell., 1877.

TH. A. BRUHIN.

Comparative Flora of Wisconsin. (Wien, 1877.) The author enumerates 1300 species in 533 genera as occurring in that state.

REPORT OF THE U. S. ENTOMOLOGICAL COMMISSION. By Packard, Riley and Thomas.

This paper can only be obtained by applying to the representative of your district. Congress should have been more liberal and have placed a portion of the edition at the disposal of the Department of Agriculture.

THE GARDENER'S MONTHLY AND HORTICULTURIST. Edited by THOMAS MEEHAN, Published by CHARLES H. MAROT. Philadelphia, September, 1878.

We receive the above named publication regularly, and beleive that it has no equal in the shape of a gardener's or horticulturist's journal. It is in fact the best publication for the amateur culturist, florist, pomologist, arboriculturist, nurseryman, seedman and lover of the country. It also contains monthly a limited number of articles of interest to the naturalist.

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BULLETIN OF THE UNITED STATES GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES. Volume IV. Nos. 1, 2 and 3. Washington, 1878.

These would require a more extended notice, but for want of space, we will merely notice the subjects of some of the principle articles:

Notes on the Ornithology of the lower Rio Grande of Texas, from observations made during the season of 1877. By George L. Bennett.

Description of Fishes from the Cretaceous and Terriary Deposits west of the Mississippi River. By E. D. Cope.

Description of new Tineina from Texas, and others from more northern localities. By V. T. Chambers.

Description of Noctuidæ, Chiefly from California. By A. R. Grote.

Studies of the American Herodiones. By Robert Ridgway.

Notes of the Butterflies Collected by Dr. Edward Palmer, during the Summer 1877. By Samuel H. Scudder.

Professor Owen on the Pythonomorpha. By E. D. Cope.

The Geographical Distribution of the Mammalia. By Joel Asaph Allen.

Notes on a Collection of Fish from the Rio Grande. By David S. Jordan, M. D.

Description of a Fossil Passerine Bird from the Insect-bearing Shaoles of Colorado. By J. A. Allen. (Plate.)

The Coleoptera of the Alpine Regions of the Rocky Mountains. By John L. LeConte, M. D.

Paleontological Papers No. 7. By C. A. White, M. D.

On the Mineralogy of Nevada. By W. J. Hoffmann, M. D.

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PROSPECTUS

OF THE

VALLEY NATURALIST.

THE VALLEY NATURALIST is a monthly paper, devoted to the interests of the Naturalists of the Mississippi Valley and the West. Its object is to aid the diffusion of natural science in a popular form and to furnish a medium of recording the observations of our Western Naturalists.

We are aware that there are many scientific papers in the East, in which a Naturalist can publish the results of his observations, but there is *none* in which he can place the many minor notes that every working Naturalist daily makes, and which, for this reason, however interesting they may be, often remain forever buried in the note-book of the observer.

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V.1, NO.11
SCIENCE

THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., NOVEMBER, 1878. NUMBER 11.

Conchology.

W. W. Calkins on a New Species of Succinea.

Succinea Calumetensis, Calkins.

Shell oblong, ovate, thin, shining, finely striate; color golden; whirles three, the last broad, dilated; aperture below expanded. Striæ of growth marked. Length 12 to 13 mill. Locality: Banks of the Calumet River, Cook County, Ill.

Remarks: The nearest allies to this species are *S. retusa*, Lea, and *S. ovalis*, Gould. It differs from both however in size and markings. Found abundantly clinging to long grass partially submerged in the water.

It is confined so far as my observations go to the locality mentioned and the adjoining swampy tracts. *S. retusa* was described by Dr. Lea from a single specimen found in Ohio. My Cabinet, Cabinet of the Davenport Academy of sciences; of the Chicago Academy, etc.

A Naturalist in Florida—Cruise of the "Rose Bud."

BY W. W. CALKINS, CHICAGO, ILL.

[Paper No. 5.]

As indicated at the close of my last paper the "Expedition" had returned to Key West richly loaded with material, particularly corals. When the Rose Bud arrived, nearly every foot of space in her was filled with them, and their oder which is something like that of tainted flesh was not yet gone. Messrs. Allen and Pierce at whose store had been our headquarters, kindly allowed us the use of an adjoining lot on which to dry and pack the specimens. The schooner was unloaded and we occupied the next few days in packing, shipping, etc. About thirty barrels of corals were sent home.

This series now in the Chicago Academy of Sciences, illustrate about all the reef building species common to Florida waters. Several boxes of shells and fish were also sent. Having finished this task in which we were kindly assisted by Allen and Pierce, who donated barrels, boxes, etc. without number, we began to pine for another voyage. Negotiations were entered into with the owners of the Rose Bud for a trip among the Keys to the northeastward or as far as we might wish to go. Our arrangements being completed, the schooner thoroughly cleaned and provisioned with plenty of fresh rainwater in our casks; our last letters answered and my dairy of events written up to date, we again set sail on the seventh of February, heading for Bahiahonda Key which lies some forty miles eastward from Key West. By consulting a map it will be seen that a long chain of Islands extend from the latter point as far as Key Biscayne, which is near the mainland on the Atlantic coast. Our course was along the eastern side of these Keys. We passed quite close to many of them and I noticed that nearly all were small, lying low and flat, and covered with a dense growth of Mangrove. On some the *Cocoanut* and *Carica Pa-pa-ya* were growing in a wild state. The fruit of the former was procured by our party from these trees, and though not ripe the milk was delicious and a very agreeable change from rainwater, which was our regular drink plus polywogs and other interesting animalia. There are no wells on Key West or elsewhere nearer than the mainland, the inhabitants depend entirely on the rains, which they catch in large public and private reservoirs at Key West. We were adviced to *qua-lify* the water before drinking, but if we had done so to the extend practised by most Floridians, the properties of the *aqua* would have been entirely lost in the qualifier. So we remained virtuous, only taking a little light claret occasionally to steady the stomach when the sea was rough. My companions, Drs. Brown and Velie, became a little tender on this trip, and for a while found a reclining position on the deck under the shade of a sail the most agreeable. As for myself, I was never sea sick from first to last, and if anyone should so state, I beg to deny the allegation and scorn the allegator. The day was glorious, and as we bowled along at the rate of six or seven knots an hour, I felt like sailing on forever.

On the trip we passed away a portion of the time with dip nets in fishing up sea-weed (*Sargassum*), but not finding any mollusks or crustaceons upon it, gave up the amusement. Two o'clock came and we anchored under the lea of Bahiahonda Key; after dinner we went off in the "dingy" and spent the rest of the day collecting shells, a number of rare species were secured, some on the outer beach and others in a shallow lagoon on the Key. Here I found a single specimen of *marginella guttata*, a rare West Indian form. When night came we felt well repaid for our work. While I was studying over my books in the cabin, Velie and the sailors were sitting outside watching for turtle, I soon joined them, never shall I forget the beauty of that night; the Rose Bud lay quietly at anchor in what is called the entrance to Vaccas Bay, a large sheet of water about ten miles long and five wide, surrounded by a dozen Keys which make it a safe harbor. Numerous shallows and channels thread the Bay, it is the resort of the small sponging vessels from Key West, and is the favorite ground for sponges. For the naturalist or sportsman the advantages are unsurpassed, millions of birds are flying about, the waters teem with myriads of fish, the Keys are covered with a dense vegetation, new forms startle one at every step, new cries are heard. We sat far into the night contemplating all these things, and when at last we crawled down into our little cabin to try and sleep, we found it almost impossible to do so, the next day opened bright and fair, the sun came glittering and glimmering over the waters, revealing to us about thirty vessels lying at anchor in the Bay, these were "spongers." After some further explorations we weighed anchor at ten and sailed down the Bay. On the way we saw the spongers at work. The *modus operandi* is this: having anchored their schooner, two men get into the small boat, provided simply with a pole about fifteen feet long to which is attached a hook, and a common water pail with a glass bottom. One rows the boat slowly, while the other sinking his pail in the water sees clearly anything on the bottom of the sea to a depth of fifteen feet or more. Quick as lightning down goes the pole and up comes a sponge. The sponger becomes an adept and seldom misses his aim.

Sponges grow in water from two feet deep to many hundreds. We waded around in shallow water and secured a number, but I noticed that the best ones were in water from five to twenty feet deep. Sometimes the sponger strikes it rich and loads his boat in a few days, but it generally takes from four to six weeks to get a cargo for a ten ton vessel. The sponges, when first taken out of the water, are of a gelatinous soft nature resembling putrid meat. When a "dingy" load is secured or the days work is done, the sponger sails for his anchorage which is always near some island, here they build in shallow water a pen of small poles which the call a "crawl," into this they dumped the sponges. The tide washes in and out and in a week most of the gelatinous matter has disappeared. One of the men stripping stark naked goes into the "crawl" and completes the work with his hands. The sponges are then conveyed in a boat to the land and left to dry, when a full cargo is obtained it is loaded and marketed at Key West, a dollar a pound being paid for the best sheepswool. Other qualities bring less. Sponging is a great business here and the supply seems inexhaustible.

On our way down the harbor we stopped a few hours at Pigeon Key, I found here a few shells not abundant elsewhere. The pipe-stem coral (*Manicina areolata*) grew plentifully on the flats where at low tide the water was not more than eight inches deep. I also obtained in the same localities another coral of rare interest — *Millepora alcicornis*, L. About dark we reached Key Vaccas and anchored for the night in a little rock ribbed bay. We had been hungry for turtle

and while sitting on the deck after supper, Albury espied a large one not far of thrusting its head out of the water, it was dark, but getting into the dingy with the turtle pegs the sailors skulled carefully toward it, after some time we heard a splash and an exclamation from the boys. We felt sure of turtle steaks for breakfast and eagerly awaited the return of the boat, but alas it brought no turtle. They had hit one and were about to put it in the dingy when they discovered that it was chained to a stake. Some sponger had wounded it and left it there temporarily. The next morning the owner reclaimed his prize. We found Vaccas Key to be quite large, it was covered with mangroves, *Chamerops Palmetto*, etc. There were a few cocoanut trees. We obtained about the same species of shells as elsewhere —both land and marine, a few forms were interesting such as *Turbinella muricatum*, *Chiton picens*, *Aplysia* or sea hare, etc. Here were obtained the monster star-fish (*Oreaster gigas*), some of them fifteen inches in diameter.

In a geological point of view Vaccas Key is interesting, a portion of its surface being rough, and the coral limestones broken into fragments and fretted with numerous fissures and holes. Dr. Velie caught here several very good species of fish, such as Sting Rays, Toad Fish, Cow Fish and Sharks. Having spent as much time here as was thought best, we decided to visit Sandy Key and Cape Sable. The former lay about twenty miles distant across Florida Bay. The next morning opened clear with a high wind but as it was in the right direction we set sail and were soon crossing the Bay at the rate of seven knots an hour. The run only occupied three hours and about noon we came to anchor under shelter of Sandy Key, this was a mere sand bank about a mile long and forty rods wide. Getting into the dingy we went ashore, we found a number of large trees, such as gum, mangrove, etc. The ever present cactus was also there. While wandering around I saw for the first time in its live state the land shell *Orthalicus Zebra*, they were hibernating according to habit upon the gum trees about five feet from the ground. Further investigation showed a number of the shells in a cactus thicket near by, Dr. Brown and myself went in regardless of cactus or anything else and secured everything of value including some soldier crabs of immense size which we found occupying large *Pyrula* shells.

Although winter time, there was anything but an arctic breeze blowing on Sandy Key. Though dressed lightly we suffered from the heat, the perspiration ran in streams. We had no soothing syrup along, not even water, our limbs were bleeding from numerous cactus pricks, but we worked on bravely and at night made up for our sufferings by discussing the day's events over a bottle of claret in the cabin of the Rose Bud. About twelve o'clock to-night a tremendous "norther" came up and our schooner was tossed about like a feather. The Captain ran out another anchor, and knowing that we were safe we slept tranquilly on until daylight. Then going on deck we found everything calm again and the Rose Bud almost aground. The tide was out and thousands of acres of "mud flats" were bare of water, this was a welcome sight of which more anon.

Paleontology.

W. W. Calkins on a New Coal Measures Fossil.

Polyphemopsis Vermillionensis, Calkins.

Shell of moderate size, gradually tapering to an acute apex. Volutions seven, swollen, increasing in size to the last, which is prominent. Sutures well marked. Outer lip thin, aperture narrow; surface smooth. Length one inch; breadth seven-sixteenths inches.

Locality and position: Shales of the Lower Coal Measures. Big Vermillion River, La Lalle County, Ill.

Remarks: This species differs from any that I have seen from other localities in the same horizon. Associated with it was a species of *Nucula*, perhaps *N. inflata*. Discovered by Amos C. Baldwin of Deer Park, Ill. My cabinet. Cabinet of Davenport Academy of Sciences.

To Correspondents.

All communications for this paper should be accompanied by the name of the author, not necessarily for publication, but as evidence of good faith on the part of the writer. Write only on one side of the paper. Be particularly careful to write the *scientific names* plain

Articles for publication may be accompanied with small sketches or outlines of insects, plants or leaves, etc., which we will have engraved for publication. All contributions should be sent to us two weeks before publication day, which is understood to be the first of the month, if sketches accompany the articles, they should be send four weeks before publication day, as it takes an immense space of time to engrave them. Correspondents wanted in every State.

We shall take pleasure in naming any specimens of plants and insects sent by correspondents. Persons who have already sent or may hereafter send small collections of specimens to be named, will please inform us if any of the species sent are from other States than their own. Lists of species found in any particular locality are of especial interest, as throwing light upon the geographical distribution of species. But to make them of real value, it is requisite that we know for certain whether or not all the specimens in any particular list come from that particular locality, and if not, from what locality they do come.

Agents, this is a splendid chance to add another good paying publication to your list. A liberal per centage allowed.

Entomology.

Causes of the Buzzing of Insects, by M. J. Perez.

Since the experiments of Chabrier, Burmeister, Laudris, &c., the buzzing of insects is attributed to the vibrations of the air rubbing against the margins of the stigmatic orifices of the thorax under the action of the motory muscles of the wings. The latter organs are considered only to play a minimum part by modifying more or less the sounds produced by the respiratory orifices. I have repeated all of the experiments of the above authors and have not always arrived at the results an nounced by them, or I have thought that I could put upon them an interpretation different from theirs:

1. It is quite true that by sticking together the wings of a fly (*Sarcophaga carnaria*), as Chabrier did, we do not prevent the sound from being produced, but not that the wings can thus be kept in a state of complete immobility. The flexibility of these organs allows the base, which is not stuck, to obey the contractions of the muscles of flight; this base vibrates, and the buzzing is produced. But all buzzing is stopped, if, by holding the wings pressed together, over as large an extent as possible, so as to exert a certain traction upon their bases, all movements of these organs is rendered impossible. However the wings be retained, provided their immobility be complete, the buzzing absolutely ceases; contrary to Hunter's opinion.

2. By removing the scaly parts with which the margin of the stigmata is furnished, is far from doing away with the buzzing, as asserted by Chabrier, it is not even modified, provided the operation has not weakened the animal.

3. The respiratory orifice may be more or less seriously injured in different ways, we may introduce into them, solid bodies of considerable size without preventing the buzzing or altering its *timbre*.

4. If the thoracic stigmata be stopped hermetically, as was done by Burmeister, the buzzing is by no means annihilated; it is only weakened in proportion to the weakening of the flight itself.

There are then produced, especially in the Diptera,. effects which merit notice. The animal becomes slow and lazy, and no longer flies willingly. If it flies, its flight which is badly sustained, soon stops; then the insect sinks down and gives no more signs of life. I once saw an *Eristalis* (*E. tenax*) which, having escaped quickly from my fingers towards the window after the occlusion of of its stigmata, fell without movement at my feet, completely exhausted by a flight of a few centimetres. This result is not always produced so rapidly, but it never fails to supervene after a few efforts at flight. It is easily explained by the complete absorbtion of the provision of oxygen contained in the tracheæ of the thorax, in consequence of the contraction of the muscles of flight. It is true asphyxia. In a few moments however, the fly returns to life owing to the afflux of air through the abdomen into the thorax,

the animal can then again attempt to fly or at least to walk; but actual death is not long in coming. These effects are so constant and easily obtained that it is truly surprising that no experimenter has called attention to them.

The causes of buzzing certainly reside in the wings. It has long been recognized that the cutting of these organs more or less near their insertion has a more or less marked influence upon the buzzing. It becomes thinner and sharper, the quality itself is notably modified. It loses its softness (veloutè) due to the friction of the air upon the margin of the wings and becomes in a manner "nasal." The *timbre* perceived under these circumstances resembles that of reed instruments or still more that of certain electrical contact-breakers, and has no resemblance to the sound that can be produced by the passage of air throught an orifice. This sound is, however completely in relation to the repeated beatings of the wing-stumps against the solid parts surrounding it, or of the corneous pieces which it contains [*osselets radicaux* of Chabrier] against each other.

If in an animal treated as above, the wing-stump is coated with a slightly viscid fluid substance which the air only dries slowly, the perceived sound is sensibly dulled, without the stigmata being in any way modified or the movement of the wings hampered.

When the section affects the stump itself, the sound produced becomes sharper and weaker. It is destroyed as soon as a sensitive part is reached, but this, as may easily be ascertained, is because the animal ceases to perform motions which have become painful.

To sum up, in the Hymenoptera and Diptera, the buzzing is due to two distinct causes:—one, the vibration of which the articulation of the wing is the seat and which constitutes true buzzing; the other the friction of the wing against the air, an effect which more or less modifies the former. It would not be impossible from these data to produce artificially the buzzing of these animals; and I have some hopes of succeeding in this.

In the Lepidoptera of strong flight, such as the sphinxes, the soft and full buzzing which these animals produce is only due to the friction of the air by the wings. This sound, which is always grave, is alone produced; it is not accompanied by the basal beatings, owing to a peculiar organization, and especially to the presence of the scales.

In the dragon flies also, in which the base of the wing is furnished with soft fleshy parts, no true buzzing occurs, but a simple rustling due to the friction of the organs of flight.—[*Comptes Rendus*, Sept., 1878.

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The Hymenoptera of Bastrop County, Texas, as Observed During the Years 1867-77.

BY L. HEILIGBRODT, BASTROP, TEXAS.

(Paper No. 4.)

Abbreviations: v. c. very common; c. common; n. c. not common; r. rare; v. r. very rare. Those species which are marked very common and part of those marked common constitute an essential feature of the insect fauna of this part of Texas.

Vespidæ.

Polistes americanus, Fabr. c
P. annularis, Linn. v c
P. bellicosus, Cress. c
P. generosus, Cress. c
P. perplexus, Cress. n c
P. rubiginosus, St. Farg. v c
P. texanus, Cress. c
P. variatus, Cress. c
Vespa cuneata, Fabr. n c
V. occidentalis, Cress. n c
V. sulphurea, Sauss. c

Andronidæ.

Agapostemon æruginosus, Smith. v c
A. tricolor, St. Farg. c
Augochlora lucidula, Smith. c
A. pura, Say. c
Halictus albitarsis, Cress. c.
H. disparilis, Cress. c
H. occidentalis, Cress. r
Nomia heterocera, Say. n c
N. Nortoni, Cress. v c

Apidæ.

Anthophora occidentalis, Cress. r
A. texana, Cress. r
Apathus elatus, Fabr. r
Apis mellifica, Linn. v c
Bombus pennsylvanicus. DeGeer. v c
Centris lanosa, Cress. r
Epeolus texanus, Cress. v c
Megachile comata, Cress. n c
M. facunda, Cress. v c
M. grandis, Cress. c
M. pruina, Smith, v c
M. pugnata, Say. c
Melissodes atripes, Cress. v c
M. brevicornis, Cress. n c
M. densa, Cress. v c
M. marginella, Cress. v c
M. obliqua, Say. v c
M. texana, Cress. c
Nomada texana, Cress. r
Xylocopa purpurea, Cress. c
X. texana, Cress. c
X. virginica, Drury. v c

Meteorology.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of Sept, 1878. Observations taken at 6:30 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 122° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer of the month	29.92
Highest barometer, Sept. 19, 6 A. M.	30.07
Lowest " " 4, 2 P. M.	29.79
Monthly range	.28

THERMOMETER.

Mean temperature for the month	59.32
Mean temp. of warmest day, Sept. 3	64.66
" " of coldest day, Sept. 17	56.
Maximum temp. Sept. 4, 2 P. M.	79.
Minimum " " 25, 6:00 A. M.	48.
Greatest daily variation Sept. 4	23.
Least " " " 17	5.
Monthly range of temperature	33.
Mean daily range of temperature	13.93

RELATIVE HUMIDITY.

Mean relative humidity of the month	87.51
Highest mean humidity for 24 hrs. 26th	94.09
Lowest " " " 24th	80.09
Maximum humidity. 27th	100.00
Minimum " 24th	55.08
Greatest daily variation, 24th	37.06
Least " " 17th	6.05

RECAPITULATION (BAY NURSERY).

Rainfall in inches during the month	00.57
" " " since July 1st, 1878	00.57

WEATHER.

Number of clear and fair days	24
Number of cloudy days	6
Number of days in which rain fell	3
Number of mornings of low fog	3
No. of mornings of overcast high fog	6

WIND—90 OBSERVATIONS.

Southwest and west	28
Northwest and north	20
Northeast and east	0
Southeast and south	6
Calm	36

Nothing occurred in the meteorological phenomena of the month unusual. Weather was very pleasant and the change of the season was some earlier than last year. Rain fell on the 27th, 28th and 29th in measurable quantities—the first of any quantity, that was susceptible of measurement this agricultural year thus far, or since July 1st, 1878. An earthquake shock was felt on the 29th at 6 P. M. Vibrations seemed to come from the southwest towards the northeast. Quite heavy rainfall in a hard shower followed immediately afterward. Sufficient water fell to thoroughly lay the dust and render the streets muddy the following day.

Remember the address of the Valley Naturalist is Room 38, N. W. cor. Third and Pine Streets, St. Louis, Mo.

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Room 38, N. W. cor. Third and Pine Streets,

SAINT LOUIS, MO.

Editorial Chat.

No botanical articles—for want of space.

What has become of our friend Prof. C. V. Riley?

Imported cabbage butterfly is crowded out this month—next issue *sure*.

Thomas E. Bean, Esq., formerly a resident of Galena, Ill., is now residing in our city.

Don't forget to read our clubbing rates for 1879 with other publications on another page.

Tell your scientific friends to send two 3-cent stamps for prospuctus and January number.

We hope to here from our old friends for the coming year (Volume 2), don't forget to sent a $1 William.

Prof. Ward is going to Europe next month—hope he will write to the VALLEY NATURALIST occasionally.

Look out for the January number; send a stamp for the prospectus, also the address of your scientific friends.

No ornithological articles this month—for want of space. Ornithology will be well represented next month.

$5.00 only will be the price for a full-page advertisement in the January issue. Send us your advertisement.

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Directions for Sending Insects.

All letters desiring information respecting noxious and other insects, should be accompanied by specimens, the more in number the better. Such specimens should always be packed along with cotton, wool, or some such substance, in a little pasteboard box that is of convenient size, *and never enclosed loose in the letter*. Whenever possible larvæ (i. e. grubs, caterpillars, maggots, etc.) should be packed alive, in some tight tin box—the tighter the better, as air holes are not needed—along with a supply of their appropriate food, sufficient to last them on their journey; otherwise they generally die on the road and shrivel up to nothing. Along with the specimens send as full an account as possible of the habits of the insect, respecting which you desire information; for example: what plant or plants it infests; whether it destroys the leaves, the buds, the twigs, or the stem; how long it has been known to you; what amount of damages it has done, etc. Such particulars are often not only of high scientific interest, but of great practical importance.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

J. E. v. Bergenstamm and P. Löw Synopsis Cecidomyidarum. (From Zool. Bot. Gesell., Wien, 1877.)

This paper is an enumeration of the species and genera of *Cecidomyidæ*. The family in all consists of 606 species, unequally distributed in about 40 genera.

Enumeratio Insectorum Norvegicum Auctore. H. Siebke. Christiana, 1877.

This work is, as its title indicates, an enumeration of the insects of the Scandinavian Peninsula. It consists of 775 pp. and forms a fit companion work to the lists of British insects issued by the London Entomological Society.

The Kansas City Review of Science and Industry. Theo. S. Case, Editor. Kansas City, October, 1878.

This publication should be in the hands of every naturalist. Among the articles contained in this number we may mention the proceedings of Societies, Archæology, Scientific Miscellany, Geography, Zoology, Meteorology, Correspondence, Editorial notes, Book Notices, etc. The subscription price is $2.50 per annum, or with the Valley Naturalist $3.00. Subscriptions received at this office.

Le Naturaliste Canadien. M. L'Abbe Provancher, Editor. Cap Rouge, Canada, October, 1878.

We receive this publication regularly, and deem it worthy the attention of those who desire to be posted on the progress of natural history in Canada. This number contains a list of the Hymenoptera of Canada, an article on the Mineral Production of Canada, Correspondence and much other valuable information. The subscription price is $2.25 for subscribers in the United States, or with the Valley Naturalist $2.50. Subscriptions recieved at this office.

The American Quarterly Microscopical Journal. Edited by Romyn Hitchcock. Published by Hitchcock & Wall. Volume I, Number 1, November, 1878.

We have received the first number of this handsome journal, which contains 82 pages, and seven fine plates. It is printed on good book paper and set in large clear type, making in all the handsomest journal, we have seen for some time. Among its contributors we notice the names of J. D. Hyatts, Prof. H. L. Smith, F. B. Hime, Prof. W. H. Leaman, Dr. W. T. Belfield, Prof. Wm. Lighton, E. Percival Wright, Prof. C. V. Riley, and many others.

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The Western Temperance Weekly. Published by C. Maynard, St. Louis, 1878.

We have received the prospectus of the above publication, which, it is the desire and expectation of the publisher to issue from the press a journal containing such temperance and miscellaneous literature as will make it sought for by the temperance people at large, as well as commend it to the attention of all interested in the welfare of our common humanity and the dissemination of ennobling principles; such a publication, in fact, as will prove a pleasure and profit to every family circle, temperance association or individual. Each number will consist of 16 pages, super-royal octavo. The subscription price will be $2.00 per annum, or with the Valley Naturalist $2.50.

Answers to Correspondents.

[We will be pleased to name specimens which may be sent by correspondents. In all cases the specimens should be numbered and the exact locality and date of capture should be given. When possible, it is desirable to receive at least two specimens of each species. Should our correspondence become too voluminous, we will return the names by mail, so as to avoid filling up too much space with a dry list of names. As a great deal of time is required to name specimens carefully, we will hereafter take no notice of imperfectly preserved specimens or of specimens of which the locality is not given.]

W. W. C., Chicago, Ill.:

The fossil you mention in your letter under date of November 9, was mailed to your address yesterday (Nov. 11). We hope you will receive it in good condition.

Aug. W. H., Fort Madison, Ia.:

The piece of mineral which you forwarded to our address October 26th, is not as you suggested, a meteorite, but a piece of Lava. How it got on the island we are unable to tell.

A. M., Sing Sing, N. Y.:

Thanks for your favorable opinion of our "V. N." We shall make a great many improvements in it. Send two 3-cent stamps for prospectus and a copy of January issue.

W. F., South St. Louis, Mo.:

The small mammal you send us, is not as you supposed, a ground mole, but a common gopher. Yes, we shall always be pleased to name specimens for you.

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We are aware that there are many scientific papers in the East, in which a Naturalist can publish the results of his observations, but there is *none* in which he can place the many minor notes that every working Naturalist daily makes, and which, for this reason, however interesting they may be, often remain forever buried in the note-book of the observer.

Instead, then, of wishing to set up as a rival to our Eastern brethren, we wish to be considered rather as aiding and supplementing their good work. Naturalists we hope will aid us both by subscribing and contributing articles for publication.

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Autumnal Pictures.

AUGUSTA LARNED.

I see the hills where cattle graze,
The hills soft meshed in silver haze,
The gold brown brook and ancient bridge,
And old red mill beneath the ridge,
And dim lights on the orchard side,
With moss grown trees low branching wide;
The hamlet nestled in the glade—
A drowsy nook that loves the shade.

The dusty highway, long and brown,
Slow creeping out beyond the town
To breast the hill side in its strength,
A silent treeless mile in length.
Far to the hanging woods on high
That with their verdure soothe the eye
With myriad dyes of dusky green
That wear September's richest seen.

O'er old stone walls the blackberry twines,
Inlaced with wanton gadding vines,
The clematis and wild fox-grape,
The shad-bush and the feathered brake,
And woodbine curled in cedar spire
That soon shall glow a line of fire;
No darker could the elder gleam
With fruitage dipped in Stygian stream.

All freaked and splashed with guiltless blood
The sumach flares along the wood;
The mullein takes its lonely stand
Upon the hilly pasture land,
Where slow the cricket's voice is heard
Plaining some monitory word,
Shrilled by a small black-coated friar
Who preaches 'neath the furse and brier.

The golden rod from myriad whorls
Its sunny oriflammes unfurls,
And triumphs o'er the dusty way,
Companioned by the thistle gay,
That spreads a disk so rosy fair
To feed the pretty birds of air,
And foremost with a twittering note
The dainty goldfinch swells its throat.

The noontide warms the quiet air
With scent of apples spiced and rare,
And quinces by the mossy well
Feel in their veins old Midas spell,
While clusters on the bronzing vine
Breathe out an odor half devine.
From thick embordered, bosky trees
Comes now the murmurous hum of bees.

Far off the golden stubble land
Lies in a warm and glowing band,
As if old earth, sunned through and through
Had ripened to a richer hue;
Clouds mottled like the ringdove's breast
Move softly onward toward the west,
With rifts of deep and tender hue,
A nameless depth of gentian blue.

In perfect beauty, flushed and sweet,
Dear autumn comes with glowing feet;
Her tanned cheek wears a sunset dye,
A laughing light is in her eye;
About her shapely anbles brown
Swells out a modest russet gown—
With here and there a color dash—
A breast-knot of the mountain ash.
Her round arms globed melons bear,
And scarlet leaves have crowned her hair.

—[*Ex.*

Meteorology.

Meteorological Report of Monticello, Jones County, Iowa.

BY M. M. MOULTON, MONTICELLO, IOWA.

The temperature for the month of October, 1878, has been above the normal, and more rain has fallen than in any other year since 1854 with the exception of the years 1855, '56, '58, '61, '63, and '77. The highest temperature for the month was 80° on the 14th against 82° last year. The lowest temperature reached was 27° on the 27th against 24° last year. The mean temperature for the month was 49° 9′ against 49° 7′ last year, and was 2° 7′ above the normal. The temperature of well-water was 50° 1° above last year. The first snow of the season was showered down upon us on the 28th, four days earlier than last year, making only 245 days between snow storms. Only .50 inch fell and it melted off before evening. This makes ten times that snow has put in an appearance this month since 1854. Rain fell on seven days against 13 days last year. The total amount of rainfall was 8.82 inches against 6.21 inches last year and was 1.25 inches above the normal.

Zodiacal light was unusually distinct on the evenings of the 2, 11, 18 and 19. It thundered and lightened on the 1, 8, 10, 13 and 15. A lunar halo on the evenings of the 4, 12, 13 and 15. Hazy on the 7, 13, 16, 17, 19, 20 23 and 27. Frost on the 19, 22, 25, 26, 27, 28, 30 and 31. It hailed a little on the 1 and 8. A lunar corona on the 7. A rainbow on the afternoon of the 14. A tornado on the 8.

The people of Monticello, Iowa will have occasion to date back to Tuesday, October 8th, 1878, for the next two generations at least. It was general election day for state, county and township officers, and just as the town clock in the school-house tower indicated half past five in the afternoon, a destructive tornado struck the southwestern portion of the town, and passing off in a northeasterly direction, totally destroyed 10 dwelling houses, 2 churches, 9 barns and stables, 1 ice house, and more or less damaging 42 other buildings. The day opened with a temperature 55° at 7 A. M. Nimbus clouds and a fresh breeze from the south and a little springling of rain at 10 A. M. Also again at noon. The temperature at noon was 73°, and nimbus clouds and a gentle breeze from the east. The temperature remained at 73° up to and including the time of the tornado. The wind came from the east until the arrival of a stronger current of air from the southwest, when the weather vane backed around via the north to the s. w.

For an hour previous to the arrival of the storm a huge bank of nimbus clouds were seen piled up in the west and southwest, with occasional vivid flashes of lightning accompanied with loud peals of thunder, and when this ocean of nimbus clouds approached from the southwest, a light strip appeared at the horizon and widened as the storm made headway in its course. The friction of the wind rolled up the underside of the black clouds, and they had very much the appearance of the waves of the ocean coming in from sea before a heavy gale of wind.

The first damage done was the total destruction of E. K. Murdock's dwelling house, 3 miles west and 1 mile south of Monticello in Castle grove. Then following a line northwesterly, destroying the dwelling house of Mr. Brunthear in this township, damaging the school-building in District No. 3. Then passing through the south portion of town, crossing Kitty Creek at Skelley's ford, and totally destroying James Sloan's dwelling house in Sec. 23, 1 mile east of town, then across the Maquoketa river, destroying the German church in Richland Township, Sec. 19, 4 miles northeast of town.

The storm was a quarter of a mile in width and lasted less than one minute in any one

place, and traveled the whole course of 8 or 10 miles in a few moments. In the centre of the track of the storm the ruins are mostly left in a northeasterly direction. But on either side of the centre of the track, the debris is left at every point of the compass.

A little hail and rain fell a few moments before the work of destruction commenced. In all it measured less than a quarter of an inch, not enough to wet through the plastering of the houses that lost the roofs. During the whole of the storm a loud roaring noise like the roar of the approaching of a thousand trains of cars, or the noise of the ocean while being lashed by a furious storm.

Robins were seen flying south on the 13th; Ducks and geese flying south on the 13th, 21st and 28th. Sand-hill Cranes on the 29th. Black Birds on the 24th.

The northwest was the prevailing wind as follows, viz: n. w. 10 days, s. 8 days, s. e. 5 days, s. w. 3 days, w. 3 days and n. 2 days. It was clear on 8 days, cloudy on 8 days, stormy on 8 days, frost on 8 days and hazy on 10 days.

Missouri Weather Service—Sept., '78.

PROF. F. E. NIPHER, DIRECTOR, ST. LOUIS.

At the central station during the past September the average temperature has been 63.9°, the normal temperature being 69.1°. The extremes of temperature were 88° on the 8th and 44° on the 12th. In 1864 Dr. Engelmann observed a September temperature of 102.5°, while in 1839 a temperature of 35° was noted. The temperature of the month was therefore normal.

In the state, the mean temperature has been, at Corning and Oregan 66.7, Boonville 67.8, Lebanon 67.2, Kansas City 63.5, Lexington 69.1, Neosho 63.7.

On the 11th frost was observed over the region n. of a line drawn through Sedalia and Hannibal (M. K. & P. R. R.) while on the 12th and 13th the frost line passed through Neosho and St. Louis, being marked approximately by the St. Louis and San Francisco R. R. On the 21st and 25th, the frost line is marked by the Missouri river. Ice is reported to have formed at Big Creek (s. of Lincoln Co.) on the 12th and 21st, but was observed at no other station. Vegetation is everywhere unharmed on the uplands.

On the 23d a hail storm at Macon, covered the ground with hail-stones about ⅜ inch in diameter. At the central station the rainfall has been 3.93 inches, an excess of 0.94 inch over the normal rainfall. In 1871 the September rainfall was only 0.02, while in 1866, it reached 10.53 inches. Ten times in 42 years the September rainfall has exceeded that of last September.

In the state the area of greatest rainfall (over 3 inches) is bounded by the Iron Mt. and the St. L. & San Francisco railroads, while the belt of least rain extends along the Missouri, Kansas and Texas railroad, including also the n. e. part of the state. In the n. w. part of the state the rainfall again exceeds two inches.

Observers who do not note the time of beginning and end of rains, are earnestly requested to do so, as it will double the value of their work.

REPORT FOR OCTOBER, 1878.

The mean temperature of October, at the central station, has been 55.8°, the normal being 55.7°. The highest temperature of the month was 84° on the 14th, the lowest being 25.4° on the 31st. The extremes of October temperature during 42 years have been 91.5° in 1867 and 21 in 1863. The past month has therefore a normal temperature.

The rainfall was 3.39 inches, the normal rainfall being 3.05. The October rainfall has exceeded that of last month 12 times in 38 years. During that time the greatest October rainfall has ranged from 0.29 inch in 1872 to 8.74 in 1847.

"Black frost" (the temperature of the air falling to or below 32° F.), occurred on the 27th, 28th, 29th and 31st. Last year black frost came 10 days later, on November 6th.

In the state, the rainfall has exceeded 3 inches in the n. w. and s. e., falling to less than one inch in a belt of country stretching from Wright City to Nevada.

The snowstorm of the 26th was heaviest in the n. (2 inches deep); the snow line for this storm runs 20 miles s. of Louisiana, to near Lebanon, thence n. w. to Nevada. S. of this line the precipitation was heavy, but was in the form of rain.

The first black frost of the season in this state, occurred over the n. half of the state on the 18th. Black frosts were general on the 27th, 28th, 29th and 31st.

Low temperatures have been observed as follows: 27th, Oregon 22.5°, Louisiana 24°, Macon 23°, Lexington 22°, Kansas City 21°; 28th, Ironton 24°; 31st, Moberly 16°, St. Louis 25.4°, Pleasant Hill 21°, Booneville 21°, Lebanon 22°, Neosho 24°.

Directions for Sending Insects.

All letters desiring information respecting noxious and other insects, should be accompanied by specimens, the more in number the better. Such specimens should always be packed along with cotton, wool, or some such substance, in a little pasteboard box that is of convenient size, *and never enclosed loose in the letter*. Whenever possible larvæ (i. e. grubs, caterpillars, maggots, etc.) should be packed alive, in some tight tin box—the tighter the better, as air holes are not needed—along with a supply of their appropriate food, sufficient to last them on their journey; otherwise they generally die on the road and shrivel up to nothing. Along with the specimens send as full an account as possible of the habits of the insect, respecting which you desire information; for example: what plant or plants it infests; whether it destroys the leaves, the buds, the twigs, or the stem; how long it has been known to you; what amount of damages it has done, etc. Such particulars are often not only of high scientific interest, but of great practical importance.

The Valley Naturalist is the only paper containing articles of every branch of Natural Science.

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THE VALLEY NATURALIST.

Established January, 1878. (NATURÆ DISCERE MORES.) Henry Skaer, Publisher.

VOLUME I. SAINT LOUIS, MO., DECEMBER, 1878. NUMBER 12.

THE HUMBLE BEE.

Insect lover of the sun,
Joy of thy dominion!
Sailor of the atmosphere,
Swimmer through the waves of air,
Voyager of light and noon,
Epicurean of June.
Wait, I pray thee, till I come
Within earshot of thy hum—
All without is martyrdom.

When the south wind in May days,
With a net of shining haze
Silvers the horizon wall;
And, with softness touching all,
Tints the human countenance
With a color of romance;
And infusing subtle heats
Turns the sod to violets—
Thou in sunny solitudes,
Rover of the underwoods,
The green silence dost displace
With thy mellow breezy bass.

Hot midsummer's petted crone,
Sweet to me thy drowsy tune,
Filling of countless sunny hours,
Long days, and solid bank of flowers,
Of Gulfs of sweetness without bound,
In Indian wildernesses found;
Of Syrian peace, immortal leasure,
Firmest cheer and bird-like pleasure.

Aught unsavory or unclean
Hath my insect never seen,
But violets and bilberry bells,
Maple sap and daffodils,
Clover, catchfly, adder's tongue,
And brior-roses dwell among:
All beside was unknown waste,
All was pictured as he passed.

—R. W. EMERSON.

Ward's Cabinet Sold to Washington University.

We are happy to announce the sale last month (but too late for our October issue) of this fine cabinet to our University. Professor Ward brought the cabinet here from his great establishment in Rochester, in August, and left it here on display for two months, while he was himself engaged in mineral and other examinations in our western states. During this interval Prof. Potter of the University took the matter in charge and worked with a subscription paper among friends of the University, and by perseverance and his high personal influence he raised in a short time the whole sum of $3,000, which was the exceedingly low price for which Prof. Ward offered the cabinet when he brought it to St. Louis. The money has been paid and the great cabinet is now being arranged in a large museum hall prepared for the purpose at the University.

The collection is very extended and rich in the two chief departments of mineralogy and geology, and has as an adjunct about a hundred models in glass of representative types of Invertebrate animals, living in our present seas, and belonging to the department of modern zoology. These models, of life size, and most exquisite in their strange and varied forms, and in th e delicacy of their colors. They, like the case of jems among the minerals formed the great centre of attraction to the ladies who crowded around them at the display of the collection on Fourth street. The cabinet of minerals was not large, but was very choice. We, at St. Louis, have never before seen such splendid specimens of several score of minerals as were here brought together. The agates, chalcedony, calcites, zinc, iron, tin, lead and copper ores were in superb specimens, shining, fresh and finely crystalized. We noticed with interest Prof. Ward's plan of mounting the specimens, each one on a distinct block or pedestal, with a printed label, which gives besides the name and locality (as is generally done) the additional facts of its chemical and crystallographical formulæ.

The Geological cabinet has two parts or divisions. One is a large series of rocks from all parts of the world. It includes, we believe most of the known varieties of Granite, Sylvite, Porphyry, Basalt, Trop, Trachyte, Quartzite, Slate, Limestones, Gypsums, Alabaster, Coals, etc., The polished marbles and the ores were magnificent and all were of uniform and large size.

Prof. Ward's casts of Celebrated Fossils are after all the great attraction in his collection. While we were thinking about how we might best describe this most unique and attractive department, we have seen in the *Globe-Democrat* an article on Prof. Ward's display which is so spicy and at the same time so true a description and so interesting that we have decided to present it in full to our readers.

The writer says:

"George Augustus Sala, in one of the numbers of the *Welcome Guest*, printed ever so many years ago, tells the story of a naturalist who had an insatiable passion for collecting rare and curious specimens of every kind. He had, by dint of diligent research, amassed a collection that no museum in Europe could excel, when he heard of a gigantic crustacean haunting some lone island in the Pacific ocean. Nothing would do but he must charter a vessel and crew and proceed toward Ultima Thule in quest of this monster of the deep. How he bade his wife and friends adieu, how the savants of the city on the shore watched the vessel receding from their gaze till the horizon hid the last spar from their view; how the crew lingered neither for sea-serpent nor kraken, but kept straight on to the goal of the owner's scientific ambition; how the mailed *Homarus* of the Indian seas made a meal of the rash adventurers, and how "the widow sold the collection for a good round sum and married the curate, for whom she had long had a tender feeling," is all graphically told by the chief of literary hacks. And, strange to say, *outre* as Mr. Sala's story may seem, it has its frequent parallel in the annals of scientific research. Tales of collector's adventures are often rich and rare, and it is of a collector in a way that is peculiarly American that the present sketch shall speak.

His name is Henry A. Ward, and is Professor of Geology and Zoology in the University of Rochester, N. Y. At Rochester he has a big factory for the manufacture, preparation and fitting of scientific specimens. Fancy ten large two-story buildings, besides sheds and yards all devoted to receiving, preparing and shipping specimens, with a score of men working like beavers as taxidermists, osteologists, moulders and mineralogists. But there they are, and if you want to see samples of their work you can visit 13 south Fourth street, this city (no charge, "come in or keep out" is all the door-keeper will say), and satiate your craving for the romance of science without the least trouble.

After entering this museum the first thing you come across is the skull of a big Dinotherium, a burly beast from the Rhine Valley of the tertiary age, that had huge downward tusks and fed on lacustrine weeds. You see the big tusks and ask if Mr. Dinotherium usually traveled with a trunk. Mr. Ward says not, and points to the small nerve foramen; "small nerve, small proboscis, something after the tapir fashion probably." Next is a Mammoth's skull, and then another skull of the same genus with a pair of tusks that must have been very useful in repressing any unnecessary activity on the part of their owner. Close by the mammoth skull —perhaps it would be as well to state that the mammoth stood sixteen feet in his socks, and measured twenty-six feet from the bristly end of his tail to the tip of his front teeth or tusks—stands a scale-clad varmint, supposed to be a king bee among the armadillos and called Glyptodon. His carapace is unusually extensive, and so constructed that the

critter's head protrudes at one end, and his tail, that looks like a warty stalactite, at the other. Admiral Dupotet picked him up somewhere down in Montevideo, and deposited him at the Jardins des Plantes, offering to sell or lease on favorable terms. But the Paris folks didn't buy, and the Admiral's widow donated the walking grotto to the town museum at Dijon, and the Dijon folks fetched him away, all but the head, which couldn't be found. There was any amount of scientific bickering between the authorities of the two museums over the transfer, and when Mr. Ward visited Dijon to make a cast of the unique specimen, permission was only granted on condition he didn't sell a cast to the Jarden des Plants. But by and by the head turned up in paris. Mr. Ward went along and got permission to make a cast, with the proviso he shouldn't sell one to the Dijon folks. So Paris had a head and no carapace or tail, and Dijon had a carapace and tail but no head. After long quarrelling a truce was agreed on. Dijon got a cast of the head and Paris got a cast of the body covering of the glyptodon, and there was peace among scientists once more.

The largest specimens Mr. Ward has on exhibition at St. Louis are casts. He visited every museum in Europe, and wherever he found a rare specimen, or typical form of unusual excellence, he managed to get molds and make casts.

Sometimes it was plain sailing to get the necessary permission and sometimes it wasn't. When he copied the big Ballarat nugget, valued at over $200,000, and the workmen had to labor with sleeves rolled up to their shoulders, so careful were the authorities of the depositary bank. At the British Museum he wanted to get a cast of the fossil Archæopteryx, the long-tailed bird of the Solenhofen lithographic slate. He saw Prof. Richard Owen, who showed him the long array of caudal vertebræ with the feather marks on each side, and pointed out this and that peculiarity of structure and then said: "Curious specimen, very. We haven't quite described it as yet," and then shut him up with a snap. So Mr. Ward didn't get a cast there.

But he got lots of other things. There is hardly a point of importance in palæontology which can not be successfully illustrated from this collection. There are the trilobites and crinoids of the upper Silurian, the fishes (Holoptychius especially) of the Old Red Sandstone, the curious crustaceans of the Triassic, and the big frog (Labyrinthodon) of the same deposit. The saurians of the Lias are presented in full force. The restoration of the Ishthyosaurus and Plesiosaurus are so wonderfully life-like you almost expect to see them wave their tails. As for ammonites of all kinds, fossil crinoides, belemnites and pterodactyls, you will find enough to occupy a directory man three weeks in taking a census. Fossils from the chalk are plenty, and as for the tertiary specimens, the array is simply immense. There is a marsh turtle from the Siwalek Hills that would be a fortune to any restaurant in St. Louis; the eggs of Æpiornis, the foot of Dinornis, and the head and foot of the Dodo. Up on the wall hangs a cast of the fossil man from Mauritius, probably only a few hundred years old, and on a shelf below is the skull of the cave bear and the Engis and Neanderthal human skulls, the oldest specimens of humanity extant. And not to slight any respectable beast that had his own sweet will in the wilds of the remote past, there are authentic remains of the teleosaurus, the megalosaurus, the megatherium, the megalonyx and tracks of the long-legged bird that walked over the estuarine shores of Connecticut when 'steady habits' were unknown."

Never before has St. Louis had so rare and valuable a scientific exhibition as is this great cabinet which Prof. Ward has displayed to our citizens. Washington University may well be proud of it.

Conchology.

List of Iowa Mollusca.

Below we give a list Iowa molluska in the collection of Professor F. M. Witter of Muscatine, Iowa, up to January, 1878.

HELICIDÆ.

Helix albolabris, Say.
H. alternata, Say.
H. arborca, Say.
H. clausa, Say.
H. concava, Say.
H. fulva, Drap.
H. hirsuta, Say.
H. labyrinthica, Say.
H. lineata, Say.
H. minuscula, Binney.
H. monodon, Rackett.
H. monodon, var. leaii, Ward.
H. multilineata, Say.
H. striatella, Anthony.
H. profunda, Say.
H. thyroides, Say.
Cionella subcylindrica, Linn.
Pupa armifera, Say.
P. contracta, Say.
P. fallax, Say.
P. pentodon, Say.
Succinea avara, Morse.
S. obliqua, Say.
S. ovalis, Gould.
Limax camdestris, Binn.

PHILOMYCIDÆ.

Tepenophorus carolinensis, Bosc.

AURICULDÆ.

Carychium exignum, Say.

LIMNÆIDÆ.

Limnea caperata, Say.
L. desidiosa, Say.
L. reflexa, Say.
Physa gyrina, Say.
P. heterostropha, Say.
Planobris bicarinatus, Say.
P. deflectus, Say.
P. exacutus, Say.
P. parvus, Say.
P. trivolvis, Say.
Segmentina wheatleyi, Lea.
Ancylus fuseus, Adams.

VALVATIDÆ.

Valvata tricarinata, Say.

VIVIPARIDÆ.

Lioplax subcarinata, Say.
Melantho subsolida, Anthony.
Vivipara intertexta, Say.

RISSOIDÆ.

Amnicola cincinnatiensis, Anthony.
A. porata, Say.
Bythinella obtusa, Lea.
Somatogyrus isogonus, Say.

STREPOMATIDÆ.

Pleurocera subulare, Lea.

CORBICULADÆ.

Sphaerium sphaericum, Anthony.
S. stamineum, Conrad.
S. transversum, Say.
Pisidium compressum, Prime.

UNIONIDÆ.

Anodonta corpulenta, Cooper.
A, edentula, Say.
A. ferussaciana, Lea.
A. grandis, Say.
A. imbecilis, Say.
A. suborbiculata, Say.
Margaritans complanata, Barnes.
M. confragosa, Lea.
M. deltoidea, Lea.
M. marginata, Say.
M. rugosa, Barnes.
Unio æsopus, Green.
U. alatus. Say.
U. anodontoides, Lea.
U. asperrimus, Lea.
U. capax, Green.
U. cornutus, Barnes.
U. crassidens, Lamarck.
U. ebenus, Lea.
U. elegans, Lea.
U. ellipsis, Lea.
U. gibbosus, Barnes.
U. gracilis, Barnes.
U. graniferus, Lea.
U. lævissimus, Lea.
U. ligamentinus, Lamark.
U. luteolus, Lamark.
U. metenevrus, Rafinesque.
U. mississippiensis, Conrad.
U. occidens, Lea.
U. mytiloides, Rafinesque,
U. occidens. Lea,
U. mytiloides, Rafinesque,
U. orbiculates, Hildreth.
U. parvus, Barnes.
U. plicatus, Barnes.
U. pustulatus, Lea.
U. pustulosus, Lea.
U. rectus, Lamark.
U. rubiginosus, Lea.
U. securis, Lea.
U. tenuissimus, Lea.
U. trigonus, Lea.
U. tuberculatus, Barnes.
U. triangularis, Barnes.
U. undulatus, Barnes.
U. wardii, Lea.
U. zigzag, Lea.

Volume I of the Valley Naturalist, complete, for sale at 75 cents per volume, or two volumes for 1.25.

DSI

Entomology.

A List of Rhopalocera Known to Occur in the Vicinity of Chicago, Ill., Viz.: Cook County, Ill., and Lake County, Ind.

C. E. WORTHINGTON, IRVING PARK, COOK COUNTY, ILL.

Abbreviations: a very common, b common, c occurs regularly in small numbers, d rare, e very rare, f occasional. Ind. and Ill. only in that locality.

Papilio ajax, L. 3 varieties. f
P. philenor, L. a
P. asterias, F. b
P. troilus, L. d Ind.
P. turnus, L. c
P. cresphontes, Cram. f
Pieris protodice, Bd.-Lec. b
P. oleracea, Bd. f
P. rapæ, L. a
Anthocaris olympia, Edw. e Ind.
Colias cæsonia, Stoll. b
C. curypheme, Bd. b
C. " var. Keewaydin, Edw. c
C. philodice, Godt. a
Terias lisa, Bd. c
Danais archippus, F. a
Argynnis idalia, Drury. b
A. cypele, Fab. b
A. aphrodite, Fab. c
A. alcertis, Edw. e
A. atlantis, Edw. f
A. myrina, Cram. c
A. bellonia, Fab. c
Euptoieta claudea, Cram. d
Phyciodes Harrasii, Scud. f
P. nycteis, Doub. d
P. tharos, Drury. a
Grapta interrogationis, Fab. 2 varieties. c
G. comma, Harr. c
G. J. album, Bd. d
Vanessa antiopa, L. a
Pyrameis atalanta, L. b
P. Huntera, Drury. a
P. Cardui, L. a
Sunonia lavinia, Cram. d
Limenitis ursula, F. c
L. arthemis, Drury. f
L. dissippus, Godt. a
Neonympha Eurytris, F. c
N. Canthus, L. c
Debis portlandia, F. d
Satyms nephele, Kirby. e
Libythea Bachmanni, Kirt. e
Thecta calanus, Hueb. c
T. Edwardsii, Saund. d
T. Acadica, Edw. f
Chrysophanus thœ, Bd.-Lec. b
C. Americana, d'Urban. d
Lycæna pseudargiolus, Bd.-Lec. 3 vars. c
L. comyntas, Sodt. a
Ancyloxypha minitor, Fab. b
Thymelicus garita, Reak. c
Pamphila Zabulon, Bd.-Lec. c
P. sassæus, Scud. d
P. huron, Edw. e
P. Peckins, Kirby. a
P. mystic, Edw. c
P. cernes, Bd.-Lec. a
P. bimacula, Gr.-Rob. d
P. delaware, Edw. e
P. hianna, Scud. e
P. massassoit, Scud. f
P. pontiæ, Edw. e
Thanaos icelus, Lint. d Ind.
T. martialis, Scud. c
T. Juvenalis, F. c
Pholisora catullus, Cram. c
Eudamus pylades, Scud. a
E. bathyllus, Sm.-Abb. f
E. lycidas, Sm.-Abb. e
E. tityms, Fab. b

What Others Think of Us.

The following has appeared in a circular of which 10,000 copies were circulated last September:

"THE VALLEY NATURALIST, a monthly newspaper, giving the current news in all the departments of Natural History, and furnishing a medium for communication between Western Naturalists, and the prompt publication of their scientific observations and discoveries. Subscription price $1 per year. Henry Skaer, Editor, Room 38, N. W. cor. Third and Pine Streets, St. Louis, Mo.

MR. SKAER is doing a valuable and most meritorious work with his enterprising scientific journal, and I take great pleasure in here (unknown to and unsolicited by him) calling the attention of Naturalists to his paper, inviting them to subscribe for it. The price is small and it will repay the investment. HENRY A. WARD."

Office of U. S. GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.

Ed. Valley Naturalist:

I have to acknowledge your kindness in sending me a copy of THE VALLEY NATURALIST. I am pleased to observe this evidence of active interest in Natural History on your part, and hope your new venture will be successful. * * * I shall be pleased to receive the paper as I have no doubt it will often contain matter of use to me in the preparation of my books.

Very truly yours,

ELLIOTT COUES.

WASHINGTON, D. C., January 5, 1878.

The United States is somewhat peculiar in the number of journals devoted to natural history, and published in different parts of the country, not unfrequently by associations of young men, who find in this way a satisfactory medium for announcing their observations and discoveries. January brings us the latest addition to this series in the VALLEY NATURALIST, published monthly at St. Louis, at the reasonable price of one dollar per annum. The sample copy contains a number of interesting items. — *Harker's Weekly*, February 23d, 1878.

The VALLEY NATURALIST.—This enterprising sheet appears promptly with every month and bids fair to become a useful medium for scientific notes.—*Botanical Gazette*, May, 1878.

But for want of space we would publish more testimonials, but as it is these will be enough to show what others think of us.

Answers to Correspondents.

[We will be pleased to name specimens which may be sent by correspondents. In all cases the specimens should be numbered and the exact locality and date of capture should be given. When possible, it is desirable to receive at least two specimens of each species. Should our correspondence become too voluminous, we will return the names by mail, so as to avoid filling up too much space with a dry list of names. As a great deal of time is required to name specimens carefully, we will hereafter take no notice of imperfectly preserved specimens or of specimens of which the locality is not given.]

A. H. Young, Kingston Furnace, Mo.:

Of the collection of plants you send us last May, (see p. 23, VALLEY NATURALIST, vol. 1) we were unable to determine No. 4. It is *Hydrodhyllum virginicum*.

ON OUR TABLE.

Publishers and Authors are kindly requested to send copies of Books, Reports, Pamphlets, etc., or proof-sheets of same to the publisher of this paper, for the purpose of keeping the scientific world posted on all recent publications.

BIRDS OF THE COLORADO VALLEY. By ELLIOTT COUES. Washington, D. C. 1878.

Just as we go to press, we receive part first of "Birds of the Colorado Valley." A repository of scientific and popular information concerning North American ornithology. It contains seventy illustrations. Government print.

IMPORTANT TO CONTRIBUTORS.

Any article appearing in the VALLEY NATURALIST, if ordered within 5 days after publication day (the first of every month) will be printed in neat style on 100 slips at the modest price of $1.00. Thus giving the contributors a chance to secure their articles printed apart from the general matter, to sent to their friends who do not receive the VALLEY NATURALIST. This offer will be especially convenient for those who contribute lists of birds, plants, shells, insects, etc., from certain localities. All orders must be accompanied with the money. We fill all orders the same day they are received.

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SAINT LOUIS, MO.

Editorial Chat.

Mr. Julius Hurter of this city has the finest private collecton of stuffed birds and mammals we have seen for some time. He has also in his possession a live male albino opossum, which was caught on the other side of the river.

Mr. Thos. E. Bean has established an agency in this city for the sale of scientific and other books, etc. Read his advertisements on another page.

The Key West (Fla.) *Key* says: "Our fishing smacks report a stream of fresh or poisonous water along our bay coast from two to ten fathoms out, that kills all the fish in its range. They report sailing for 200 miles through dead fish, covering the sea as far as the eye could reach with all the varieties. Immediately on the shore the water is salt and natural, while less than a mile off it appears of a red brick color."

Dr. Farnesworth of Iowa, thinks that the present Indians are a remnant of the same race that built the mounds. His opinion is based upon a study of the anatomical structure and modes of burial of the two races.

To our readers who may wish to obtain copies of the Missouri Entomological Reports recently advertised by us, we wish to inform that we have sold the entire stock to S. E. Cassino, of Salem, Mass., who will be pleased to fill their orders at reasonable prices.

ERRATA.—Various unavoidable errata of a minor character are scattered through the volume. The intelligent reader will have no difficulty in correcting these for himself:

Page 6, column 2, line 28, pollen,
p. 6, c. 2, l. 21 and 35, abortive ovules,
p. 8, c. 1, l. 26, protean,
p. 8, c. 2, l. 53, denticulate for buticulate.

We are indebted to the *Ednia Sentinel*, Ednia, Knox County, Mo., for the following: "A young man exhibited an albino opossum on the street Saturday, which was purchased for Mark Tandy, the Dallas City taxidermist. This is the second one of the species which has been caught here. Mr. Tandy secured the other. Since writing the above, a beautiful white rabbit has been brought to town and sold to Mr. Tandy's agent here. Bridge Creek abouuds in albinos.

Mr. W. G. Smith in an article on the potato fungus, says that many specimens of the potato aphis were found with spawn-threads running through their limbs and bursting out in parts developing the oogonia and antheridia of the fungus. It is easy from this to see how aphides might assist in spreading the disease and that the presence of (infected) aphides being concomitant with the first appearance of the potato disease, what would be more natural than to attribute it to them. This may perhaps explain why Mr. A. Sonee and other observers have so strenuously insisted that the potato disease was of insect rather than fungoid origin.

The last volume of the London Entomological Society, which has just reached us, contains a very interesting article by Mr. J. W. Slater in which he attempts to show that gaily coloured caterpillars, not provided with bristles or other means of defense as a rule dwell on poisonous plants. Although it is very frequently the case that they do live on poisonous plants, we do not think that it has been shown that they have on this account any exemplior from parasitic enemies.

The bright green cantharides are stated by Mr. MacLachlan to be particularly subject to the attacks of beetles. Mr. Wallace was of the opinion that the observed correlation between bright coloration and distastefulness was brought about by means of natural selection. Distastefulness above would be of little value to larvæ, but bright colours would serve as a danger signal, warning all comers to keep at a distance.

TO OUR SURSCRIBERS.—It is with much regret that we close the VALLEY NATURALIST with the present number. The exactments of the publishers private business have interfered materially with his devoting as much time to the paper as he would wish and have finally become so great as to force him to give up either one or the other. Though it was not to be expected that a paper of this character would afford any pecuniary remuneration, in that respect, at least we have been fairly successful, notwithstanding the smallness of the number of working naturalists in the west.

It is the intention of the publisher to recommence the issue of this journal after the lapse of a few years, by which time he hopes to be able to give more time to it, and hopes that the number of persons interested in science will be materially increased by means of the departments of natural history which are being established in connection with the various schools and colleges throughout the west.

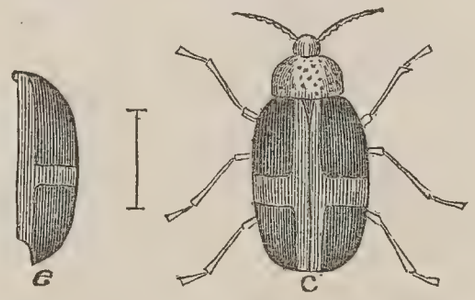
Thanking our subscribers for their kind patronage for the present, we bid them farewell.

Correspondence.

Ed. Valley Naturalist:

Your VALLEY NATURALIST arrived a few days ago. Its contents are highly interesttng to every friend of natural history. I see my friend L. Heiligbrodt is occasionally contributing to your paper, and I will promise to do the same during the coming winter. I noticed in a german paper that a "german students' commers" was held at your city on October 12th last, and had I had a clerk, I would have went there to attend it, for I was a member of the "corps Rhenania" during 1867-69 in the City of Freiburg, Baden.

But now to entomology, I send you a piece of boxwood, with a drawing on it represent- a new spccies of Colaspis of the family of *Chrysomelidæ* (Coleoptera).



It is feeding upon the leaves of *Quercus undulata*, Torrey, (see Val. Nat. p. 8, No. 2) and was sent to me from Grant County, New Mexico, in the summer of '77, together with some other great rarities, such as *Plusiotes, gloriosa*, *Strategus cersus*, etc.

This *Colaspis* is certainly a most beautiful *Chrysomelide*, being of a bright smaragdine color of metallic lustre, with a crimson cross over the elytra as figure *c* shows. The average measure of the eighteen specimens was about 7 mm. in length and 4 mm. in width. Body above rather coarsely and confluently punctured. The elytra are somewhat arcuate

at their pleuræ, and have their tips deeply excavated, as in figure *e*, forming a spine.

The species is closely allied to *Colaspis arizonæ*, Crotch, and as it has the general appearance of a *Coscinoptera* and *Saxinis*, I immediately took it for *Mrodora crucifera*, Lec. But on sending specimens to Dr. Horn it was pronounced to be a *Colaspis*. I hope this distinguished author will soon give a better and more scientific description of this pretty insect.

CARL F. GISSLER.

Brooklyn. E. D., October 29, 1878.

Ed. Valley Naturalist:

I have now in my possession a white swallow (*H. horreoruno*) which was shot on September 5th, about two miles above here. The wings, back and tail are a dirty white, the throat tawney yellow, the breast and under parts white. This is the third that I know of being shot in the vicinity of Philadelphia during the last twelve years.

JAMES S. JOHNSON.

Frankford, November 18, 1878.

Meteorology.

Meteorological Report of the City of Oakland, California.

BY J. B. TREMBLY, M. D., OAKLAND, CAL.

Meteorological synopsis for the month of Dec., 1878. Observations taken at 6:30 A. M. and 2 and 9 P. M. Latitude 37° 48′ 20″ north. Longitude 122° 15′ 20″ west. Height above the sea 24 feet.

BAROMETER.

Mean barometer of the month	30.06
Highest barometer, Dec. 13, 9 P. M	30.33
Lowest " " 31, 7 A. M.	29.65
Monthly range	.68

THERMOMETER.

Mean temperature for the month	46.49
Mean temp. of warmest day, Dec. 4	58.00
" " of coldest day, Dec. 29	37.
Maximum temp. Dec. 3, 2 P. M.	73.
Minimum " " 29, 7:00 A. M.	27.
Greatest daily variation Dec. 3	33.
Least " " " 5	4.
Monthly range of temperature	46.
Mean daily range of temperature	18.61

RELATIVE HUMIDITY.

Mean relative humidity of the month	77.37
Highest mean humidity for 24 hrs. 8th	91.09
Lowest " " " 13th	54.08
Maximum humidity. 21st	100.00
Minimum " 28th	38.06
Greatest daily variation, 25th	45.06
Least " "	3.03

RECAPITULATION (BAY NURSERY).

Rainfall in inches during the month	.31
" " " since July 1st, 1878	3.21

WEATHER.

Number of clear and fair days	25
Number of cloudy days	6
Number of days in which rain fell	6
Number of mornings of low fog	1
No. of mornings of overcast high fog	0

WIND—93 OBSERVATIONS.

Southwest and west	12
Northwest and north	13
Northeast and east	18
Southeast and south	6
Calm	44

Comparative table for the month of December for the years 1876, 1877 and 1878:

	1876.	1877.	1878.
Mean barometrical pres're	30.01	29.99	30.66
Mean temperature	47.26	49.53	46.49
Maximum temperature	63.00	64.00	73.00
Minimum temperature	31.00	30.00	27.00
Mean relative humidity	85.51	85.42	77.37
Rainfall in inches	.40	1.75	.31
No. clear and fair days	25	21	25
No. days in which rain fell	00	8	6
Mornings frost was seen	19	12	18
No. mornings low fog	9	1	1

The dry, cold northeast winds, the extreme cold and hard frost during the month was unprecedented for several years past, if not for a much longer time, in Oakland. The mornings of the 14th and 29th were the coldest. The record kept of the 14th says: "Morning clear; cold; a very heavy white frost covering sidewalks, streets and lawns; plants of almost every kind badly frozen; ice formed half an inch thick on shallow pools of water in exposed situations; frosts did not disappear on the shady side of the walks and lawns until 11 A. M.; the coldest weather ever experienced in Oakland, and seems to sympathize with the severe storms of snow and winds prevailing on the atlantic coast; the day, although cold was very pleasant."

The gales of wind that prevailed on the 12th, 13th and 28th, from the northeast, filled the atmosphere with fine dust, scooping it up in eddies from the street and whirling it into the air, or carrying the heavier particles of sand or whatever substances movable by its force from place to place as it swept along in its boisterous course. On the evening of the 20th a very brililant meteor was seen at 6:45 P. M., moving from the southeast to the northwest; when at an angle of about 45° with the horizon it broke into fragments attended with a concussion like that of a rocket, but louder. At the moment of explosion the outer border of the bursting body gave out an almost white light, next reddish, nex light blue, next deep blue; central part seemed dark blue or black; the broken part burned for a moment and disappeared. This meteor was seen to pass over approximately about 20° of the horizon previous to its explosion. The effect upon the vision was like vivid flash of lightning on a dark night, filling the eye with momentary light and leaving the darkness darker still. The day had been cloudless, the evening was clear, with an atmospheric chill of moisture setting down on the earth, and bright starlight overhead. There was no prevailing meteorological phenomena indicating either storms or winds. The preceding and following weather was of a sameness — clear, cool, with frosty mornings. From observation but few meteors are seen on the Pacific coast compared with what is observed in the interior of the continent.

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